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Coverage of the subject has been restricted to that of Food Science and Technology Abstracts, which covers over 1200 of the important food journals, patents from 20 countries and books published world-wide. Every effort is made to include all significant references, but editorial discretion is used on the many articles of borderline interest. If the reader particularly needs an exhaustive search of the subject, we will be pleased to provide any other references that we have available. We would, in any case, encourage readers to write or telephone us with any comments or queries that they may have.

H. BROOKES

EDITOR

1

Evaluation of performance of a semi-continuous, multi-column, countercurrent solid-liquid extraction system.

Torres-Quintero, A.

Dissertation Abstracts International, B 41 (8) 2954: Order no. 8101404, 183pp. (1981) [En] [Univ. of Massachusetts, Amherst, Massachusetts 01002, USA]

A 4-column diffusion battery was used to carry out solid-liquid extraction tests over a wide range of stripping factors, mass-transfer Fourier numbers, flow rates and solute concn. Exhaustively extracted roasted and ground coffee with a narrow particle size range was used as a carrier for infused sucrose; these sucrose-containing grounds constituted the solid which was extracted. All extraction tests were carried out at approx. 25°C. Variation in extraction yield as stripping factor increased roughly paralleled the variation anticipated for diffusively controlled continuous countercurrent solid-liquid extraction, but the increase in yield in the extraction battery levelled off less rapidly than in the continuous countercurrent model. Solute concn. profiles predicted on the basis of the continuous countercurrent model agreed reasonably well with experimentally measured profiles, while the predicted extraction yields were 12-20% higher than those obtained experimentally; reasons for this difference are considered. Diffusivity of sucrose in coffee grounds ranged from 1.2×10^{-6} cm^2/s at 6% solute concn. in the solid to 0.5×10^{-6} cm^2/s at 30% solute concn. in the solid. The equilibrium distribution coeff. ranged from 2.0 at 6% concn. to 1.6 at 50% concn. JA

2

'World's fastest' form-fill-seal unit.

Anon.

Food Engineering International 5 (12) 65, 67 (1980) [En]

The new 'Ultima' form-fill-seal packaging machine manufactured by Hayssen Manufacturing Co., Sheboygan, Wisconsin, USA, is available in 3 models for producing bags of 5 × 8 in at over 120/min to 14 × 22 in at 50/min. The machine simultaneously measures, forms and pulls the packaging material, allowing the tube to be formed gently at high speed. Prototypes have given satisfactory results on long-grain rice and N_2-flushed ground coffee packages over extended plant trials. DIH

3

[Prediction of deterioration of coffee during drying and pre-drying in "barcaca", using forced convection and a solar drying system.] [Thesis; Previsao da deterioracao do cafe durante a pre-secagem em barcacas por conveccao forcada com auxilio de coletores solares, 88pp., Pt]

Iturra Quilaqueo, A. R.

Informativo Anual, Faculdade de Engenharia de Alimentos e Agricola, Universidad Estadual de Campinas No. 8, 18-21 (1980) [Pt, En]

A mathematical model was evolved from a study of the effect on quality of temp., moisture content and time during the first part of a 2-stage coffee drying system. In stage 1, moisture content dropped from 60-70 to 35%; in stage 2, to 12%. This model could be used to predict mould growth as a function of these variables. Such predicted values showed good agreement when compared with those obtained experimentally in drying 33 kg fresh coffee beans in a "barcaca" solar drying system. Graphs for predicting min. air flows during 1st stage drying may be prepared from the results, and may be used for cost analyses of the system. KME

4

Mycotoxins in coffee.

Levi, C.

Journal of the Association of Official Analytical Chemists 63 (6) 1282-1285 (1980) [17 ref. En] [General Foods Corp., Tech. Cent., White Plains, New York 10625, USA]

This paper reviews several studies relating to the susceptibility of green coffee beans to contamination by mycotoxins. Aspects covered by the studies include: normal mould flora of coffee beans; mycotoxin production in beans inoculated with *Aspergillus* spp.; effect of coffee roasting on 3 mycotoxins (aflatoxin, ochratoxin, sterigmatocystin); and the presence of these 3 mycotoxins in commercial samples of green coffee. Some previously unpublished studies of the occurrence of these mycotoxins in green coffee are also briefly reported; the results obtained indicated that the frequency of contamination is extremely low and that, when mycotoxins are found, the level of contamination is also low. Because of these findings and the knowledge that 70-80% of any mycotoxin present is destroyed during roasting it is concluded that the probability of finding mycotoxins in coffee beverage is very low. The author therefore recommends that studies of mycotoxins in coffee be discontinued. JA

5

A new type of flat sour spoilage. I. Evidence of "flat sour" spoilage by obligate anaerobes in marketed canned drinks.

Nakayama, A.; Samo, S.

Bulletin of the Japanese Society of Scientific Fisheries [Nihon Suisan Gakkai-shi] 46 (9) 1117-1123 (1980) [16 ref. En] [Toyo Inst. of Food Tech., Minami Hanayashiki, Kawanishi City, Hyogo 666, Japan]

25 samples of canned drinks incubated at 55°C were examined in microbial aspects during high temp. storage. 40 spoiled cans were found in 6 kinds of canned coffee samples. The appearance of these was very similar to that of flat sour spoilage. Spoilage ratios ranged from 0.3% to 3.6%. pH values and degrees of vacuum of the spoiled cans were lower than those of the normal cans. The contents of spoiled cans were more whitish than the normal ones and in some cans separated into clear supernatants and precipitates, but the change of flavour was very slight. From 15 out of 40 spoiled cans some spore-forming obligate anaerobes were isolated. Among 15 isolates inoculated in normal canned coffee samples, 12 isolates caused flat sour spoilage, and there is a chance that the spores of 10 isolates survive the sterilization process (F_0: 15-20). These principal characteristics except for the failure of sulphate reduction might indicate the participation of *Desulfotomaculum nigrificans*. The flat sour spoilage found in this study was caused by a least 9 obligate anaerobic isolates. AS

6

[Study of the roasting process for natural coffee in order to establish the most favourable conditions.]
Nakhmedov, F. G.; Doronin, A. F.
Konservnaya i Ovoshchesushil'naya Promyshlennost' No. 3, 20–22 (1980) [Ru] [Vses. Nauchno-issled. Inst. Konservnoi Promyshlennosti i Spetsial'noi Pishchevoi Tekh., USSR]

The effect of various roasting conditions on the quality and yield of Robusta coffee was studied, using water content, pH of infusion, total acidity, content of extractible substances and colour (optical density) as quality indices. Max. acidity was achieved at 210–215°C after 13 min roasting; prolonged roasting at higher temp. reduced the acidity. Optical density increased with increasing temp., particularly at temp. >210°C. The content of extractible substances dropped somewhat at the beginning of roasting process, but later increased considerably, reaching a max. after 14 min at 210–215°C. A temp. of 210–215°C for 13.5–14 min was considered most favourable, as the pH of the infusion was then within the range 5.1–5.3, the optical density 1.12–1.15%, extractibility was 32–33%, and combustion losses were 10.5–11%. STI

7

[Effect of packaging method on the quality of instant coffee during storage.] Einfluss des Verpackungsverfahrens auf die Qualität von löslichem Kaffee bei der Lagerung.
Simonova, V. N.; Solov'eva, T. Ja. [Ya.]
Ernährung 4 (2) 77–78 (1980) [10 ref. De, en] [Leningrad Inst. of Soviet Commerce 'F. Engels', Leningrad, USSR]

Comparative studies were conducted on changes in the organoleptic properties, fatty acid composition and volatile aroma compound content of instant coffee, packaged in (i) air or (ii) CO_2, and stored for ≤8 months at 18–20°C. Tables of results are given. The results show considerable changes in free fatty acids in (i) samples during storage, concn. of high mol. wt. unsaturated acids decreasing and concn. of low mol. wt. saturated acids increasing. The relative concn. of ethanol, propanol, 2-methyl propanol, pentanal and 3-pentanone increased and relative concn. of methyl acetate, ethyl acetate, butanol + butanone, 3-methyl butanal + isopentanol decreased in (i) during storage. Changes in (ii) were small. Sensory evaluation confirmed that detectable deterioration occurred in (i) but not in (ii). AJDW

8

Determination of 5-hydroxymethyl furfural and caffeine in coffee and chicory extracts by high performance liquid chromatography.
Smith, R. M.
Food Chemistry 7 (1) 41–45 (1981) [15 ref. En] [Loughborough Univ. of Tech., Loughborough, Leicestershire LE11 3TU, UK]

5-hydroxymethyl furfural (HMF) and caffeine in instant coffee and coffee/chicory powders were determined by HPLC on Hypersil (solvent 5% isopropanol/dichloromethane), with a variable wavelength detector at 280 nm. Results, shown in chromatograms and a table, revealed that while HMF can be readily quantified in coffee powders and used to distinguish between pure coffee and coffee/chicory mixture, it cannot be used for quantitative detn. of chicory in a mixture. RM

9

A toxicological evaluation of foods containing methylxanthines with emphasis on cocoa.
Tarka, S. M., Jr.
Dissertation Abstracts International, B 41 (9) 3410–3411: Order no. 8105812, 242pp. (1981) [En] [Pennsylvania State Univ., University Park, Pennsylvania 16802, USA]

Preliminary studies involved detn. of the acute oral LD values of methylxanthine (MX)-containing foods and of their constituent MX. Values found were: cocoa powder >15 g/kg, instant coffee 11.8 g/kg, caffeine 247 mg/kg, and instant tea 4.05 g/kg (vs. MX in the ratio occurring in tea 250 mg/kg). Studies with weanling, adult female and pregnant rats were then conducted, the main aim being to determine the effects of consumption of these MX-containing foods and their constituent MX on the developing foetus. Effects observed with cocoa (dietary levels of ≤20%) and a MX mixture (≤0.165%) included: occurrence of early foetal resorption; reduced litter size; reduced mean pup wt.; reduction in wt. gain during gestation; occurrence of foetal oedema; and increased frequency of cannibalism. Similar effects were found with instant coffee (≤7.5%), caffeine (≤0.309%), instant tea (≤5%) and tea MX (≤0.199%). None of the foods or MX studied produced any teratogenic effects or gross pathological changes. JA

10

Decaffeination process.
Hag AG
British Patent 1 584 199 (1981) [En]

Process is described in which caffeine extracted from coffee or tea is separated from a super-critical CO_2 extracting agent by selectively bonding the caffeine to an anion exchange material which is regenerated by the use of an aqueous salt solution or mineral acid. IFT

11

Mutagenicity testing of coffee: a study of problems encountered with the Ames Salmonella test system.
Aeschbacher, H. U.; Chappuis, C.; Würzner, H. P.
Food and Cosmetics Toxicology 18 (6) 605–613 (1980) [16 ref. En] [Nestle Products Tech. Assistance Co. Ltd., Biol. Lab., CH-1350 Orbe, Switzerland]

Coffee has been found to induce a very weak mutagenic effect in the Ames test, but since coffee is such a complex substance, several factors that may interfere with the results were investigated. A comparison of the activity of 2 kinds of coffee, instant coffee and fresh-brew coffee, in the Ames test revealed that both had the same properties. At max. concn. of 25–30 mg/plate, both coffees induced only a weak effect in the *Salmonella typhimurium* strain TA100 without S-9 mix. Factors investigated were: caffeine level; histidine content; autoclaving and pH, but none significantly influenced the results obtained with the Salmonella test system. VJG

12

Aggregated mixed-moisture flaked coffee of high aroma.
Klien, C. A.; Gieseker, D. R. (Procter & Gamble Co.)
United States Patent 4 267 200 (1981) [En]

Aggregated coffee flake particles comprise a number of compressed coffee flakes bonded together where ≥1 is a low-moisture flake (1%–3.5% by wt.) and ≥1 is a high-moisture flake (4.5–7% by wt.). The composite flake particles range in thickness from 0.009 to 0.016 in. The flaked coffees provide improved extractability of the water-soluble flavour constituents, exhibit high initial aroma levels, and exhibit high bed permeability. Process for preparing aggregated mixed-moisture flaked coffee is described. It involves grinding dual streams of roast coffee, combining the 2 streams, passing through a roll-mill, and screening. The final product is such that ≤60% by wt. of the product passes through a 30 mesh US standard screen. AS

13

Process and apparatus for the preparation of extracts from ground roast coffee or a mixture thereof with ground roasted chicory.
DEJ International Research Co. BV
British Patent 1 583 344 (1981) [En]

Ground roasted coffee is extracted by an aqueous solvent leaching at 60–120°C to remove all non-volatile soluble solids, followed by heating up to 200°C, and a 2nd exhaustive extractive leaching with water at 60–120°C. IFT

14

[Gas chromatographic-mass spectrometric study of *N*-alkyl- and *N*-furfurylpyrroles in roasted coffee.]
Gaschromatographisch-massenspektrometrische Untersuchung von *N*-Alkyl- und *N*-Furfurylpyrrolen in Röstkaffee.
Tressl, R.; Grünewald, K. G.; Silwar, R.
Chemie Mikrobiologie Technologie der Lebensmittel 7 (1) 28–32 (1981) [11 ref. De, en] [Forschungsinst. für Chem.-tech. Analyse, Tech. Univ. Berlin, Seestraße 13, D-1000 Berlin 65]

A special separation process, involving concentration by distillation-extraction, adsorption chromatography on silica gel, gas chromatography and capillary gas chromatography-mass spectrometry, was used to identify and semi-quantitate 20 *N*-alkylpyrrole and 15 furfurylpyrroles in freshly roasted Robusta coffee, the majority of these being identified and quantitated for the first time (data are tabulated and chromatograms given). Robusta coffee contained more alkylpyrroles but less furfurylpyrroles than Arabica coffee. Possible formation mechanisms of pyrrole derivatives are discussed. RAW

15

Storage of beverage concentrate.
Cross Paperware Ltd.
UK Patent Application 2 055 737A (1981) [En]

A method of packaging coffee concentrates in the bottom of a plastics cup for use in vending machines involves compression of large particles of concentrate to form a coherent semi-porous mass, followed by spraying with a water soluble film forming substance to form a barrier layer. The stored concentrate has acceptable solubility in boiling water, as shown by an example. AS

16

ABC of Coffee: coffee terms.
Anon.
Indian Coffee 45 (4) 109; (5) 130; (6) 174 (1981) [En]

The series continues with definitions of several coffee terms [see FSTA (1981) 13 12H1887 for preceding part.] CFTRI

17

Coffee concentration.
Societe des Produits Nestle SA
UK Patent Application 2 057 849A (1981) [En]

Process is described for concentrating extracts of coffee or tea; it involves ultrafiltration followed by reverse osmosis of the permeate which contains the aroma components. IFT

18

[Problems of quality evaluation of roast coffee by quantitative trace analysis of volatile aroma compounds.] Zur Problematik der Qualitätsbeurteilung von Röstkaffee durch quantitative Spurenanalyse flüchtiger Aromakomponenten.
Radtke-Granzer, R.; Piringer, O.-G.
Deutsche Lebensmittel-Rundschau 77 (6) 203–210 (1981) [13 ref. De, en, fr] [Fraunhofer-Inst. für Lebensmitteltech. & Verpackung, Schragenhofstrasse 35, 8000 Munich 50, Federal Republic of Germany]

Studies were conducted on the use of aroma compounds of mol. wt. <100 as indices of the sensory quality of roast coffee; aroma volatiles were analysed by GC-MS. Studies were conducted on good-quality commercial samples of coffee of 15 brands. Data are presented for concn. of 2-methylpropanal, 3-methylbutanal, diacetyl, 2-methylfuran and the sum of these compounds. Variability of concn. of the individual aroma compounds is discussed; mean total concn. of the 4 compounds studied was 110 ± 21 mg/kg. Studies were also conducted on changes in sensory quality and volatiles concn. in coffees stored in conventional or airtight packs for various periods and at various temp. Tables of results are given. Deterioration rate tended to increase with increasing temp. and O_2 concn. For all storage variables, a decrease in total concn. of the above 4 volatiles below 89 mg/kg was associated with clearly detectable loss of sensory quality. It is suggested that this could be used as an objective test for the quality of coffee. AJDW

19

[Amino acid composition of soluble coffee-type beverages.]
Nakhmedov, F. G.; Kozlova, G. G.
Konservnaya i Ovoshchesushil'naya Promyshlennost' No. 1, 19–22 (1981) [4 ref. Ru] [VNIIKP, USSR]

The amino acids in instant, coffee-type beverages (made from barley, rye, chicory, coffee, grape seeds) with high protein contents were determined after acid hydrolysis of the proteins, using LYB-4101 analyzer. Beverages containing higher proportions of cereals had higher amino acid contents. Increasing the level of reducing sugars intensified reactions producing melanoidins. Addition of 15–25% chicory improved the sensory properties of the beverages, specifically colour, flavour and aroma. Overall, 21–25% of the total amino acids were essential amino acids. The technology used to make the instant coffee-type beverages retains a considerable amount of the amino acids from the original raw materials. STI

20

[Effect of ^{60}Co γ-rays on green coffee beans. II. Changes in taste and in the composition of carboxylic acids induced in brewed coffee by γ-irradiation of green beans and storage of roast beans.]

Tomoda, G.; Matsuyama, J.; Nagano, A.; Namatame, M.; Morita, Y.

Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi] 27 (2) 68–74 (1980) [16 ref. Ja, en] [Fukushima Women's Junior Coll., 1-1 Miyashiro Chigoike, Fukushima, Japan]

Brazilian Santos green coffee beans were irradiated with ^{60}Co γ-rays at doses of 0, 0.05, 0.5 and 1.5 Mrad. Subsequent studies involved detn. by GLC of the carboxylic acid composition of the beans after roasting and evaluation by the cup test of the organoleptic quality of the beans after roasting and storage. The total acid content immediately after roasting was approx. 6000 mg/100 g beans; a ratio of 73:18:7:2 was found for chlorogenic acid:hydroxycarboxylic acid:monocarboxylic acid:other carboxylic acids. Irradiation of the green beans and subsequent storage after roasting had a marked effect on the flavour of fresh coffee, this effect being due to changes in the carboxylic acid composition. Such changes were more apparent on irradiation than during storage. Results indicated that coffee quality is more closely related to the hydroxycarboxylic acid:monocarboxylic acid ratio than to the total carboxylic acid content. [From En summ.] JA

21

[Changes in pH of coffee extract depending on temperature and quality.]

Takahashi, K.; Kondo, Y.; Sawano, T.; Mori, M.

Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi] 26 (8) 360–361 (1979) [8 ref. Ja, en] [Tokyo Eiyo-Shokuryo Coll., Setagaya-ku, Tokyo, Japan]

Colombia, Santos and Madagascar coffee beans, each roasted to 4 different levels, were brewed by the cup-test procedure and the pH was then immediately determined. The pH of all 3 types of coffee was at a min. at the light roast stage and increased at subsequent roasting levels. A decrease in pH was observed as the temp. was reduced from 70°C to 26°C, this decrease being greater in Santos and Colombia than in Madagascar coffee. [From En summ.] JA

22

Determination of caffeine using sodium *N*-chloro-*p*-toluenesulphonamide.

Mayanna, S. M.; Jayaram, B.

Analyst 106 (1263) 729–732 (1981) [20 ref. En] [Dep. of Chem., Cent. Coll., Bangalore Univ., Bangalore-560 001 India]

Sodium *N*-chloro-*p*-toluenesulphonamide, also known as chloramine-T (CAT), is a versatile oxidizing agent. This paper describes a titrimetric method for determining caffeine in various products (including alcoholic and non-alcoholic beverages), which utilizes CAT. Preliminary studies examined factors (e.g. pH, temp., ionic strength) affecting oxidation of caffeine by CAT. The recommended procedure for caffeine detn. involves the following stages: prepare accurately a solution containing approx. 1 mg caffeine/ml; add an aliquot of this solution to 50 ml 0.04N CAT solution in an iodine-flask; add a measured vol. of HCl of known concn. to obtain a resultant concn. of 0.1N; shake the mixture occasionally and after 15 min add 25 ml 2N H_2SO_4 and 25 ml 10% KI solution; titrate the liberated I with standard thiosulphate solution (0.04N); repeat the experiment without addition of caffeine solution. Amount of caffeine in the sample solution (x mg) is given by $x = My(V_2-V_1)/4$, where y is normality of the thiosulphate solution, M is the relative molecular mass of caffeine, V_2 ml is the blank titre and V_1 ml is the sample titre. Preliminary separation procedures which need to be applied before the above method are detailed for various products; these procedures are designed to remove interfering compounds. Application of the method to various products gave the following results: caffeine recovery ranging from 93% (instant tea) to 100% (cola drink and alcoholic beverage); caffeine levels of, e.g. 100 μg/ml in cola drink, 0.49 mg/ml in an alcoholic beverage, 26.2 mg/g in instant tea, 37.1 mg/g in instant coffee. JA

23

[Commercial development of portion cream and its sterile packaging.]

Kosuge, M.

Japan Fudo Saiensu 18 (5) 38–44 (1979) [Ja] [Development Planning Dep., Yukijirushi Nyugyo KK, (Snow Brand Milk Products), Japan]

From 1976 to 1979, consumption of instant coffee in Japan rose annually by about 10% whereas consumption of regular coffee rose by 20%. The increase in consumption of regular coffee has been accompanied by an increased demand for cream and the development of the portion pack of 6–12 ml. Japanese regulations concerning milk and milk products lay down that cream must contain ≥18% milk fat and no additional non-milk fat. The 'Coffee fresh' portion pack unit made by the author's company contains 8 individual 8 ml portions of UHT cream with 25% fat. The development of demand in Japan for dairy and non-dairy coffee whiteners, and of the portion packs for cream are outlined, and alternative types of packing are compared. BWH

24

[Flavour extraction process.]

Asahi Kasei Kogyo KK

Japanese Examined Patent 5 611 424 (1981) [Ja]

Process for extracting flavouring agents from e.g. meat, fish, coffee, tea, employs extraction with liquid dimethyl ether. The process is especially useful for the production of instant coffee and tea. AS

25

[Fluorine in selected non-alcoholic beverages from the Polish market.]
Sadowski, S.; Skorkowska-Zieleniewska, J.
Roczniki Panstwowego Zakladu Higieny 31 (4) 413-417 (1980) [15 ref. Pl, ru, en] [Panstwowy Zaklad Higieny 00-791 Warsaw, Poland]

F contents were determined potentiometrically in 19 var. of tea available on the Polish market (range (mg/kg DM), 52 for Jasmine tea from China to 120 for 'Golden Cup' tea from Netherlands), and in their infusions from 4 g tea leaves in 200 ml water (range, same teas, 0.21-0.84 mg); in Extra Select, Maracana and Amino Extrakt coffees (60, 42 and 72 mg/kg DM and 1.20, 0.84 and 1.44 mg in 200 ml infusion from 20 g); in Inka, Turek and cereal coffee with chicory coffee substitutes (28, 72 and 54 mg/kg DM, and 0.56, 1.44 and 1.08 mg in infusions); and in 7 herb teas (range, 16-60 mg/kg DM; and 0.07-0.24 mg in infusions as for tea). It is considered that the amount of F in natural coffee and tea infusions is sufficient to cover the accepted norms of human requirement, and that consumption of high F infusions may constitute a threat to health. SKK

26

Coffee roaster.
Moore, T. J., III
United States Patent 4 271 603 (1981) [En]

A coffee roaster for roasting small quantities of green coffee beans and having limited physical size and wt. has a roasting chamber with ≥1 perforate wall, elements for creating a heated gaseous flow through the perforate wall into the roasting chamber, and an exit orifice leading from the roasting chamber to provide an outlet for the heated gas flow. The apparatus also has an element for controlling (varying) the rate of flow of heated gas through the roasting chamber. The roasting chamber, including stirring elements, and a driven rotating shaft are inclined for better tumbling action and stirring within the roasting chamber. AS

27

Method for decaffeinating coffee.
Katz, S. N.; Gottesman, M. (General Foods Corp.)
United States Patent 4 276 315 (1981) [En]

Liquid propane, liquid butane or their mixtures at temp. 30-95°C, is employed to selectively remove caffeine from moistened green coffee. The resulting decaffeinated coffee is then roasted and processed to ground or soluble coffee products which will possess the flavour and aroma of comparable non-decaffeinated coffee products. AS

28

Liquid filter.
Kawolics, R. P.; Basel, D. R. (Meyer Dairy Products Co.)
United States Patent 4 271 024 (1981) [En]

A permanent, reuseable liquid filter for e.g. ground coffee comprises a thin flexible filter material and a support skeleton secured to its outside surface. The filter is normally in a generally flat condition and automatically assumes the general shape of a filter basket or other support structure when installed into it. The support rim then defines a filter bottom area and the remainder of the filter material engages with the filter basket or support structure side wall area. AS

29

[The bad bean's on its way out.]
Fox, L. W.; Maughan, W. S.; Stirling, H. G.
Industrie delle Bevande No. 50, 473-476, 481 (1980) [3 ref. It]

An illustrated account is presented of sophisticated modern techniques for removing undesirable beans as early as possible in coffee processing, so as to maintain quality. Selection may be carried out in producing countries at harvesting or while the beans are still green, and in consuming countries when the beans are roasted. Methods of conventional colour selection and of sorting by UV light, which reveals defects invisible to the naked eye, are discussed. It is now standard Kenyan practice to eliminate 'stinker' beans, especially from *Coffea arabica*, by fluorescence. Various monochrome or bichrome devices, adaptable either to *Coffea robusta* or to *C. arabica*, and capable of coping with 300-2000 kg beans/h, are available, with an eliminating efficiency of 93.5%. KME

30

[Coffee processing: chemical, physical and technological aspects. V. Evolution of some physical characteristics of coffee during heat treatment at constant temperature.]
Dalla Rosa, M.; Lerici, C. R.; Piva, M.; Fini, P.
Industrie delle Bevande No. 50, 466-472 (1980) [4 ref. It, en] [Istituto di Ind. Agrarie, Univ. di Bologna, Bologna, Italy]

Tests on coffee during roasting were carried out on samples of (i) *Coffea arabica*, from Central America, and (ii) *C. canephora*, var. *robusta*, from India. Moisture content, apparent density and colour were determined at different temp. (from 85° to 230°C) and wt. loss and variation in DM were measured at the conclusion of heat treatment. Data obtained (tabulated and in graphs) showed that amount of DM and increase in coffee vol. (preceded by contraction at <170°C for (i) and at <120°C for (ii)) depended on the temp. reached in the coffee beans rather than on duration of roasting, the apparent density being the direct consequence of diminution in wt. and increase in vol. Study of colour changes indicated that the roasting process was slower for (ii) than for (i), so if roasted together the resultant mixture would not be uniform, as (i) would be darker than (ii). Correlation between these parameters suggests that in practice control of one would suffice, an observation very relevant in the development of fully-automated roasting processes. As the degree of roasting reached at <190°C is limited, no matter how long the process continues, such roasting is more appropriate for a foreign rather than for an Italian market. [See FSTA (1981) 13 10H1549 for part IV.] KME

31

Brewing mechanism.
Neely, R. J. (Refreshment Machinery Inc.)
United States Patent 4 271 753 (1981) [En]

Apparatus is described for use in brewing single cup quantities of a beverage, e.g. coffee. A frame supports a vertically movable open-bottom cylinder and a piston within the cylinder. A base assembly reciprocates horizontally between the brewing position and a

discharge position. In the brewing position, a brewing cavity is positioned beneath and sealed with the cylinder. Actuation of various components through a predetermined repetitive cycle is controlled by a motor driven camshaft. AS

32

A programme of interspecific hybridization between arabica and robusta coffee in Kenya.
Vossen, H. A. M. van der; Owuor, J. B. O.
Kenya Coffee 46 (541) 131, 133-137 (1981) [16 ref. En] [Coffee Res. Sta., Ruiru, Kenya]

Results are reported from interspecific hybridization between cv. of *Coffea arabica* and induced tetraploid *C. canephora*. Bean size and liquor quality of hybrid material was inferior to arabica but better than that of pure robusta coffees. RM

33

[Coffee.] Kaffee. [Book]
Maier, H. G.
Grundlagen und Fortschritte der Lebensmitteluntersuchung ADD und Lebensmitteltechnologie 18, 199pp. ISBN 3-489-61414-3 (1981) [many ref. De] Berlin; Verlag Paul Parey

This book in the series 'Basic principles and advances in food research and food technology' includes the following chapters. History of coffee (pp. 1-2); The coffee plant (pp. 3-6); Raw coffee (pp. 7-39); Roasted coffee (pp. 40-69); Coffee infusion (pp. 70-82); Processed coffees (pp. 83-86); Industrially-prepared coffee extract (pp. 87-93); Analytical techniques (pp. 94-142); Legal requirements (pp. 143-145); Definition of coffee substitutes (p. 146); History of coffee substitutes (p. 147); Raw materials (p. 148); Non-roasted coffee substitutes (pp. 149-151); Roasted coffee substitutes (pp. 152-159); Coffee substitute infusions (pp. 160-161); Physiological aspects of coffee substitutes (p. 162); Coffee substitute extracts (pp. 163-164); Analytical methods for coffee substitutes (pp. 165-173); and legal requirements for coffee substitutes (pp. 174-175). A 19-pp. bibliography and a 5-pp. subject index are included. AJDW

34

Coffee making assembly.
Valente, P.; Piloni, T.
United States Patent 4 271 752 (1981) [En]

A coffee making assembly for automatic, domestic or bar coffee machines, has a fixed cylinder, where 2 opposite pistons reciprocate to define an infusion chamber in it; the upper piston is moved horizontally by a support carrying a funnel aligned with the cylinder in order to convey a pre-set toasted and powdered coffee dose. All movements of the pistons and support are controlled by levers and cams operated by a single motor shaft. AS

35

[A new type of flat sour spoilage of commercial canned coffee.]
Nakayama, A.; Shinya, R.
Journal of the Food Hygienic Society of Japan [Shokuhin Eiseigaku Zasshi] 22 (1) 30-36 (1981) [8 ref. Ja, en] [Toyo Inst. Food Tech., Minami Hanayashiki, Kawanishi, Hyogo, Japan]

The role of obligate anaerobes in a new type of flat sour spoilage found in Japan was investigated. 2 kinds of suspect canned coffee samples were incubated at room temp. and at 55°C. No spoiled can was found among the samples incubated at room temp., but spoiled cans were found for samples incubated at 55°C. The spoilage rates were 8.9% and 3.6% in the 2 cases for 60 tested cans. Spore-forming obligate anaerobes were isolated and found to be identical with the causative bacteria of obligate anaerobe flat sour spoilage. TM

36

[Changes in factors determining coffee bean quality during storage.] Veränderung der Qualitätsdeterminanten der Kaffeebohnen während der Lagerung.
Walkowski, A.
Lebensmittelindustrie 28 (2) 75-76 (1981) [1 ref. De, en, ru, fr] [Inst. for Knowledge of Goods, Econ. Akad., Poznan, Poland]

In addition to the traditional organoleptic criteria, physico-chemical characteristics are of increasing importance in evaluation of the quality of coffee beans. Of >500 volatiles present, approx. 10 are of major importance for coffee bean quality. Factors of importance for coffee bean quality include concn. of chlorogenic acid and its isomers, acidity, fat content, oxidative changes of the lipids, *o*-phenoloxidase activity, certain aldehydes, 5-hydroxytryptamide esters, and protein fractions. Changes in these variables during storage of coffee beans for 7-9 months were studied; the results show clear changes in the fat, protein and chlorogenic acid fractions; the acid value and alkali colour value were also altered. These changes were mainly due to oxidative and hydrolytic effects. IN

37

Method of making drip-type coffee.
Gregg, R. (Procter & Gamble Co.)
United States Patent 4 275 085 (1981) [En]

Method and apparatus are described for making drip-type coffee beverage with improved flavour and aroma, and low bitterness characteristics. The method employs an extraction portion consisting of warm water (120-175°F) to infuse or extract roasted and ground coffee by the filter-drip method to issue a relatively strong filtered coffee extract into a container. A bypass-dilution portion of water, preferably 190-205°F, is added directly to the relatively strong filtered coffee extract to dilute it to a predetermined beverage concn. at a preferred temp. A 2-temp. split-water-stream coffeemaker for making coffee beverages by this method is also described. AS

38

[Consumption and processing of natural coffee in Poland.]
Hetmanski, W.; Wojtkowiak, S.
Przemysl Spozywczy 34 (7) 254–257 (1980) [Pl, ru, en, de, fr]

Historical aspects of coffee consumption and imports in Poland are discussed. The role played by the central laboratory of the food concentrates industry in developing coffee processing in Poland is outlined. Production of 'Marago' instant coffee began in 1959. Production of instant cereal coffees is discussed; Poland became the largest world producer of this product in 1970–1972, a Polish method of manufacture being patented and licensed to Niro-Atomizer (Denmark). Over 90% of coffee imports are still marketed after traditional roasting. A detailed plan for increased processing into soluble coffee of 10 000 t coffee/yr, involving modernization of existing and building of new factories, and co-operation with exporters and with COMECON countries is presented. SKK

39

[Coffee roasting on fluidized air cushion.]
Arjona, J. L.; Roche, G.; Rios, G.; Gibert, H.; Vincent, J. C.
Industrie delle Bevande No. 52, 121–128 (1981) [9 ref. It] [Lab. de Genie Alimentaire, Univ. des Sci. & Tech. du Languedoc, Montpellier, France]

See FSTA (1980) 12 8H1343 for original Fr version.

40

Health laws and regulations – United Kingdom.
World Health Organization
International Digest of Health Legislation 30 (3) 652–663 (1979) [En] [Geneva, Switzerland]

A selection of United Kingdom health laws and regulations is presented including the following which relate to food hygiene (pp. 665–656): The Coffee and Coffee Products Regulations 1978. S.I. 1978/1420 (dated 28 Sept. 1978); The Colouring Matter in Food (Amendment) Regulations, 1978. S.I. 1978/1787 (dated 6 Dec. 1978) which implements Council Directive No. 78/144/EEC of 30 Jan. 1978; and The Materials and Articles in Contact with Food Regulations 1978 S.I. 1978/1927 (dated 21 Dec. 1978) VJG

41

Investigation of sulfur-containing components in roasted coffee.
Tressl, R.; Silwar, R.
Journal of Agricultural and Food Chemistry 29 (5) 1078–1082 (1981) [23 ref. En] [Forschungsinst. für Chem.-Tech. Analyse, Tech. Univ. Berlin, D-1000 Berlin 65]

By means of distillation-extraction, adsorption chromatography, and capillary gas chromatography-MS, 23 S components (mercaptans, sulphides, and di- and trisulphides) were characterized in roasted coffee. 15 components were identified for the first time and confirmed by synthesis (among them are S-containing furans and 2 dithiolanes). The amounts of S components were determined in roasted Arabica and Robusta coffees, as well as in instant coffee. AS

42

Coffee deacidification.
Magnolato, D. (Societe d'Assistance Technique pour Produits Nestle SA)
United States Patent 4 278 696 (1981) [En]

Process is described for deacidifying coffee extracts without altering the caffeine content by contact with finely divided chitosan. IFT

43

Soluble coffee process.
Pyves, R. R. (General Foods Ltd.)
United States Patent 4 281 023 (1981) [En]

Process is described in which an aqueous extract of roasted coffee is concentrated in a vacuum evaporator while the vacuum evaporate is condensed. The evaporate is then vacuum stripped, and the condensate stripping combined with the concentrate from the vacuum evaporator to give a composition which is dried. IFT

44

Liquid extract decaffeination with benzyl alcohol containing mixtures.
Strobel, R. G. K.; Eich, R. A. (Procter & Gamble Co.)
United States Patent 4 279 937 (1981) [En]

Coffee and other caffeine-containing liquid extracts are decaffeinated with a mixture of benzyl alcohol and ≥1 liquid thinners for benzyl alcohol. IFT

45

[Recovery of coffee aroma during roasting. I. Trapping emitted gases by condensation and absorption.]
Shin, H. K.; Crouzet, J.
Cafe-Cacao-The 25 (2) 127–136 (1981) [21 ref. Fr, en, de, es] [USTL, 34060 Montpellier Cedex, France]

The recovery of coffee aroma compounds formed during roasting, from the gases leaving a fluidized bed roasting apparatus with gas recycling, was investigated. Preliminary fractionation tests showed that the most important aroma compounds accounted for the greatest wt. % and were most easily condensed. As a result, the volatile constituents in the roasting gases were trapped by condensation and absorption with an instrumental arrangement simulating a continuous roasting operation. About 70% of the volatiles in the smoke (expressed as total organic C) were trapped by water condensation with the aid of a tubular exchanger, the yield depending on gas flow rate. About 50% of compounds from the condenser was trapped by a tower packed with Raschig rings: the yield was dependent on the height of packing and on the liquid and gas flow rates, and did not decrease when the absorbent was recycled for 20 successive operations. AS

46

Method for controlling coffee density.
Anon.
Research Disclosure No. 201, 3–4 (1981) [1 ref. En]

The final density of a powder product such as agglomerated instant coffee is controlled by continuously separating a stream of the product into a coarse fraction and a fines fraction and continuously adding back to the coarse fraction a controlled part of the fines fraction thereby increasing the density of the coarse fraction by a controlled amount. AS

47

Process for extracting ground roasted coffee.
Wouda, H. A. J. (DE] International Research Co. BV)
United States Patent 4 277 509 (1981) [En]

Process for the primary extraction of ground roasted coffee is described in which a stream of coffee particles is countercurrently extracted with an aqueous extraction liquid; the extract is subsequently combined with hydrophobic aroma components of the coffee recovered without hydrolysis by extracting with an aqueous extraction liquid combined with steam stripping. IFT

48

[Determination of caffeine in coffee, tea and chilled colas by high pressure liquid chromatography.]
Boatella Riera, J.; Torre Fornel, R. de la
Alimentaria No. 120, 41–43 (1981) [24 ref. Es] [Dep. de B romatologia, Toxicologia & Analisis Quimico Aplicado, Fac. de Farmacia, Barcelona, Spain]

Various analytical methods for detn. of caffeine are briefly reviewed. A method is then described in which samples of tea or coffee are boiled for 45 min with MgO in distilled water, the infusion is chilled, filtered under vacuum and the filtrate further purified by ultrafiltration. Drinks such as cola are extracted by ultrafiltration without prior MgO treatment. Caffeine is then eluted on a high pressure liquid chromatography column with acetonitrile and water (4:96) at pH 4 in acetic acid buffer. Using comparison with standard caffeine solutions, recovery of caffeine averaged 98% in 5 trials. Average caffeine content of 15 commercial samples of coffee was 1.6%, and that of 8 tea samples was 3.05%. Levels in decaffeinated coffee and cola-type beverages ranged from 0.13 to 0.37% (w/w) and 0.0075 to 0.015% (w/v) resp. JMa

49

Specification for roasted and ground coffee.
Bangladesh, Bangladesh Standard Institution
Bangladesh Standard BDS 805:1973, 26pp. (1978) [En] [3 Dit (Extension) Avenue, Matijheel Commercial Area, Dacca-2, Bangladesh]

Requirements are prescribed for roasted and ground coffee, and test methods are given for detn. of colour and roast, cup-test, microscopic appearance of roasted and ground coffee, detn. of grind (particle size), detection of chicory, detn. of moisture, total ash, acid-insoluble ash, water-soluble ash, alkalinity of soluble ash, water-soluble matter, caffeine, petroleum ether extract, crude fibre, sampling, and detn. of chicory from a mixture of coffee. AL

50

Headspace sampling and gas chromatographic determination of styrene migration from food-contact polystyrene cups into beverages and food simulants.
Varner, S. L.; Breder, C. V.
Journal of the Association of Official Analytical Chemists 64 (5) 1122–1130 (1981) [26 ref. En] [Div. of Chem. & Physics, FDA, Washington, DC 20204, USA]

A method is described for detn. of styrene in solutions that have been in contact with polystyrene. Standard styrene solutions or test samples are equilibrated at 60° or 90°C in sealed vials fitted with butyl rubber septa, the headspace is sampled and styrene is determined by injection onto a gas chromatograph column of 6% Carbowax 20M on Chromosorb 101 (80–100 mesh), with flame ionization detection. Limit of detection was 3 µg/l from water, 5 µg/l from coffee and tea, or 10 µg/l from 8% ethanol, the food simulating solvents and beverages studied. Migration studies were performed using (i) 3 types of food-contact polystyrene cups at 48.9°C with 8% ethanol, or foam cups with (ii) water, (iii) tea or (iv) coffee at 65.6°C. Migration studies were not performed under gas-tight conditions, in order to simulate actual conditions of usage. In (i), liquid was stored in containers for 24 h, in (ii)–(iv) for 1.25 h. Foam, impact and crystal cups used for the (i) studies contained 70.8, 771 and 2261 p.p.m. residual styrene, resp. Mean concn. of styrene in the test solution (µg/l) and amount leached/unit area in contact with the solution (µg/cm^2) were as follows: (i) foam 27, 0.036, impact 52, 0.064, crystal 151, 0.210, (ii) 6.3, 0.0077; (iii) 6.2, 0.0078; (iv) 6.4, 0.0078. DIH

51

Soluble coffee manufacture. Higher yields now possible.
Brinch Larsen, T.
Tea and Coffee Trade Journal 153 (7) 18–19, 40 (1981) [En] [A/S Niro Atomizer, Copenhagen, Denmark]

Developments in soluble coffee manufacture involving improved spray drier design and achieving higher yields and lower energy consumption are discussed. RM

52

[Determination of caffeine by HPLC.]
Duplatre, A.; Tisse, C.; Estienne, J.
Analusis 9 (8) 404–405 (1981) [12 ref. Fr] [Inst. de Chimie Analytique et du Controle de la Qualite TUT, Rue des Geraniums, 13337 Marseille Cedex 3, France]

An HPLC method is described for detn. of caffeine. Tabulated results from 6 samples of dry coffee powder agreed well with those obtained by other methods (Levine's method, Technicon analyzer, GLC). Mean caffeine contents in 9 extracts from the same sample were 0.061 g/100 g, s.d. 0.0010. RM

53

[Effect of coffee-brew extraction parameters on the concentration of methylxanthines measured by high performance liquid chromatography.]
Ndjouenkeu, R.; Clo, G.; Voilley, A.
Sciences des Aliments 1 (3) 365–375 (1981) [16 ref. Fr, en] [Lab. de Biol. Physico-Chimique, Ecole Nat. Superieure de Biol. Appliquee a la Nutr. et a l'Alimentation, Campus Univ. de Montmuzard, 21000 Dijon, France]

It was shown by HPLC that caffeine is the only methylxanthine present in coffee brews. 3 techniques for detn. of caffeine during infusion for 0.5–20 min were compared. HPLC results agreed closely with those from GLC and the physicochemical method of Kum-Tatt [*Analyst* (1961) 86, 825–828]. Caffeine content increased with brewing temp. and proportion of ground coffee used, 90% of the caffeine being extracted during the first min. [From En summ.] LH

54

[Chemical studies on coffee quality. IV. Formation of brown pigments from chlorogenic acid by roasting.]
Nakabayashi, T.; Watanabe, C.
Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi] 24 (3) 124–129 (1977) [17 ref. Ja, en] [Fac. of Agric., Shizuoka Univ., Ohya, Shizuoka-shi, Japan]

In previous studies, Sephadex G-25 column chromatography of the brown pigment obtained from an infusion of roast coffee resulted in the separation of 3 major components (pigments A, B and C). This paper reports studies aimed at identifying the precursors of these 3 pigments. Results indicated that the precursors are sucrose and chlorogenic acid. A mechanism is proposed for the formation of the 3 pigments. [From En summ.] [See FSTA (1980) 12 4H523 for part VII.] JA

55

[Factors affecting the quality of roasted coffee.]
Brazsak, J.
Edesipar 32 (3) 79–81 (1981) [4 ref. Hu, de, ru]

The quality deterioration of stored coffee (ageing) is the result of oxidation and loss of volatile substances. It can be reduced significantly by up-to-date packaging methods. In Hungary, at present, roasted coffee is packaged in Al foil-paper-polyethylene bags with ventilating holes, because vacuum packaging requires complicated preparations, and the so-called 'breathing' packages are too expensive. ESK

56

[Selection of factors preventing protein coagulation in dried milk products when dissolved in hot water.]
Pawlik, S.; Dabrowska, W.; Pronczuk, A.; Kolbarczyk, A.; Skrzypek, J.; Zgiernicka, A.
Roczniki Instytutu Przemyslu Mleczarskiego 21 (2) 5–15 (1979, publ. 1981) [8 ref. Pl, ru, en] [Inst. Przemyslu Mleczarskiego, 00-682 Warsaw, Poland]

In pilot plant experiments, raw skim milk was pasteurized, concentrated in an Alfa-Laval Centri-Therm evaporator and spray-dried in a laboratory Niro-Atomizer drier. The milk (i) without or with 0.4% Na_2HPO_4 was heated to 95°C before concentration, and the dried product was mixed with sugar and Inka instant coffee to contain 3% sugar and 1% coffee after reconstitution; or (ii) without or with 0.4% of a mixture of Na_2HPO_4/sodium citrate (1:2), was heated at 120°C for 15 s, cooled, and sugar and coffee added before concentration and drying; or (iii) with 0.1–0.4% of the Na_2HPO_4/sodium citrate mixture or citrate alone was mixed with sugar and coffee before concentration to 42–43% TS, followed by heating at 95°C for 15–900 s, and drying; or (iv) with citrate alone at 0.15–0.20% was heated at 92–95°C and processed as in (iii). Solubility of the products and controls without sugar and coffee was assessed by extent of sediment formation on solution in water at 95–100°C. Appreciable sediment appeared in (i) and (ii), but only traces in (iii) and (iv); best results were obtained with (iv) milk with 0.15% sodium citrate heat treated at 95°C for 15 s. Net Protein Utilization of such preparation and of control was 81. SKK

57

[Analysis of cereals. Analysis of chlorinated solvent residues in decaffeinated coffee and detheinated tea. Analysis of preserved vegetables.]
Italy, Metodi Ufficiali di Analisi
Bollettino dei Chimici dei Laboratori Provinciali 6 (S6) 629–655 (1980) [6 ref. It]

The following official methods of analysis are described with sections on the principle of the method, apparatus, reagents, working procedure, qualitative and quantitative interpretation of the results, errors and fields of application, and standards of comparison (sensitivity, reproducibility): Analysis of cereals – detection and detn. of milled soft wheat in milled hard wheat and in pasta by ion focussing (pp. 629–636, 3 ref.); Detection and detn. of milled soft wheat in milled hard wheat and in pasta by an immunochemical method (pp. 636–642, 3 ref.); Analysis of chlorinated solvent residues in decaffeinated coffee and detheinated tea, and detection of the chlorinated solvent used for decaffeination by GLC (pp. 643–646); Detn. of chlorinated solvent used for decaffeination [potentiometry with specific electrode] (pp. 646–650); Analysis of preserved vegetables – detn. of nitrates [spectrophotometric detn. of the coloured 1-naphthylamine compound at 555 nm] (pp.651–655). RM

58

[System for packaging of coffee.]
Donke, K.
Tecnologie Alimentari 4 (9) 39–41 (1981) [It]

Packaging of roasted coffee is briefly discussed, with reference to problems with CO_2-release and aroma retention. A one-way pressure release valve for coffee packs, the 'Aromafin V10' valve, is briefly described, together with a coffee packaging machine, the Hesser H-PLBR 212, in which the coffee is packaged in impermeable bags equipped with this valve. Throughput is 110 250-g packs/min. AJDW

59

Apparatus for preparing a hot liquid medium, preferably warm or hot beverages, such as tea and coffee.
Noren, K. L. R.; Noren, L. N.
United States Patent 4 278 013 (1981) [En]
Apparatus for preparing warm or hot beverages (tea or coffee) is described in which cold or luke-warm water passes to a container and flows through the apparatus to be heated. The water is preheated before being passed through the actual heating means. AS

60

Coffee infusion bag.
Donarumma, A.; Callahan, T.
United States Patent 4 278 691 (1981) [En]
An infusion bag is described where granular coffee is contained in a water-permeable portion attached to a water-reservoir portion; water passes downwards from the reservoir into the receptacle to contact the granules, and then the coffee brew is passed outwards from the receptacle. Strings attached to the receptacle permit positive opening and closing. The infusion bag is particularly suited to brewing coffee from ground coffee beans. AS

61

Coffee dispenser contained inside a wall mounted bracket.
Perez, S. J.
United States Patent 4 279 364 (1981) [En]
A wall mounted coffee dispenser is described. It includes a container suspended at its upper end by a stationary bracket; when a lower end of the container is pushed backwards, it slides in a track integrated with a flat disc that intercepts a dispensing opening at a bottom of the container: the dispensing opening thus clears the disc, allowing coffee to pour out. AS

62

[Effect of ^{60}Co-γ ray irradiation on green coffee beans. I. Effect of ^{60}Co-γ ray irradiation on organoleptic properties and chemical constituents of coffee beans.]
Tomoda, G.; Matsuyama, J.; Hiramoto, K.; Izu, K.
Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi] 24 (6) 286–290 (1977) [17 ref. Ja, en] [Fac. of Agric., Tamagawa Univ., Machida-shi, Tokyo, Japan]
Green coffee beans (cv. Brazil Santos and Colombia) were irradiated with ^{60}Co γ-rays at doses of 0, 0.05, 0.5, 5.0 and 10.0 Mrad. Studies were made of the effect of irradiation on the chemical composition of both green and roasted beans, and on the organoleptic properties of stored roasted beans. For Brazil Santos beans, a dose of 0.05 Mrad resulted in a mild-flavoured coffee with an improved storage life. Brazil Santos and Colombia beans differed in their response to irradiation. [From En summ.] JA

63

Brew rail adapter.
Cleland, R. K.
United States Patent 4 280 401 (1981) [En]
A releasable adapter is described that engages a small brewing cone for a small coffee brewing machine with the cone engaging rails of a large coffee brewing machine; the coffee brewing machine has a hot water dispensing head, a water discharge opening, and a pair of elongate parallel brew rails at opposite sides of the discharge opening to engage and support the rim flange of a large brew cone; the small brew cone is an upwards opening cup-like unit. AS

64

Quality control begins with cleaning.
Anon.
Tea and Coffee Trade Journal 153 (11) 16–17 (1981) [En]
The Bühler-Miag coffee bean cleaning system with cleaner, magnet, destoner and filter, is briefly described with the aid of a diagram. RM

65

[Analysis of coffee and its substitutes.]
Commission of the European Communities
Bollettino dei Chimici dei Laboratori Provinciali 32 (S2) 57–63 (1981) [1 ref. It]
The following EEC methods of analysis for coffee and coffee substitute (appendix to the first EEC directive No. 79/1066 of Nov. 13th, 1979) are reproduced: methods of analysis for coffee extracts and chicory extracts – detn. of caffeine contents; detn. of DM contents (extract of coffee and chicory, extract of soluble coffee, soluble coffee and chicory, instant coffee and chicory); and detn. of DM contents (extracts of liquid coffee, liquid chicory, coffee paste and chicory paste). RM

66

[Planning and control of automatic compact shelf-type storage systems with unloading facilities.]
Planung und Steuerung von automatischen Kompakt-Regallagern mit Verladesystem.
Riess, S.
Monatsschrift für Brauerei 34 (6) 219–224 (1981) [De] [Max Kettner Verpackungsmaschinenfabrik, Ottobrunner Strasse 1, D-8000 Munich 83, Federal Republic of Germany]
Automatic compact shelf-type storage units, suitable for barrels, palletized loads, etc. are discussed, with reference to 5 installations in the food industry (3 at breweries, 1 at a fruit processing plant and 1 at a coffee-roasting plant). Aspects considered include: types of storage system; criteria of importance for storage systems in the beverage industry; conditions for introduction of a storage system; material flow in the storage system; construction; control; and costs. AJDW

67

A method for the quantitative evaluation of emulsion stability in coffee whiteners.
Pearce, R. J.; Harper, W. J.
Journal of Food Science 47 (2) 680–681 (1982) [En]
[CSIRO Div. of Food Res., Dairy Res. Lab., PO Box 20, Highett, Victoria 3190, Australia]

A method is described for quantitatively measuring the extent of emulsion destabilization (feathering) when liquid coffee whiteners are added to hot coffee. Coffee whitener is added to standard hot coffee solution (pH 4.9, 90°C) in a 0.5% fat Babcock bottle. Feathering is observed on the surface of the whitened coffee in the wide portion of the bottle. Dense corn syrup solution is layered beneath to raise the level of the surface so that the coagulated material is concentrated into the graduated capillary tube. After standing to allow compaction, the length of the column of coagulated material is measured. IFT

68

Brewing funnel.
Stover, K. W. (Bunn-O-Matic Corp.)
United States Patent 4 303 525 (1981) [En]

Funnel is described for use in brewing beverages such as coffee, tea and the like and for discharging the beverage into either of a number of spaced reservoirs below the funnel. Stop means at a selected radial position on the funnel cooperate with limiting switches or the like on the brewing machine and prevent brewing unless the funnel is in the proper location for discharge into a reservoir. AS

69

Apparatus for making a coffee beverage.
Zimmermann, J.
United States Patent 4 306 492 (1981) [En]

Apparatus is described for enclosing a filter bag, filled with a portion of coffee provided with a cup, a bellows member beneath the cup and separated by a perforated wall, the coffee portion being inserted within the bellows. AS

70

Coffee maker.
Martin, E.N. (Societe d'Assistance Technique pour Produits Nestle SA)
United States Patent 4 300 442 (1981) [En]

A coffee making machine comprises a thin-walled moulded plastics shell-like housing with a 2-piece moulded core of heat insulating foam plastics sliding into the housing; a water supply unit, including a tank with a an electric heater means; a hot water dispenser; a dehydrated granular coffee concentrate metering and dispensing unit; and a unit to receive and mix a coffee concentrate and hot water, with a coffee dispensing duct. [From En summ.] RAW

71

Coffee vendor.
Kueser, J. J.; Fath, D. W. (UMC Industries Inc.)
United States Patent 4 305 328 (1981) [En]

A coffee vendor comprises a brewer having a horizontal relatively small-mesh screen dividing the brewer into upper and lower chambers; a line for delivering hot water to the upper chamber of the brewer; a line for delivering filtered brewed coffee from the brewer; an air compressor for delivering compressed air to the upper chamber of the brewer; and a sanitizing system for cleaning the brewer and the delivery line. AS

72

[Process for pre-roasting unroasted coffee.]
Mathey, R.-M.
French Patent Application 2 447 150 (1980) [Fr]

A procedure for partial pre-roasting of green coffee beans is described in which roasting is stopped when bean temp. reaches 150°C; an appropriate quantity of liquid at 0°C is then added, and the beans are rapidly cooled. This permits the beans to resume their original shape, and avoids premature release of aroma. The treated beans may be stored for prolonged periods without loss of quality or aroma. The aim of the procedure is improvement of the quality of coffee beverage prepared from the beans after subsequent roasting. AJDW

73

More cups lifted sans caffeine.
Lecos, C.
FDA Consumer 14 (4) 23–25 (1980) [En]

Consideration is given to the increase in decaffeinated coffee consumption in the USA. Caffeine, its effect on the central nervous system and its food uses are mentioned. Methods of manufacturing decaffeinated coffee are briefly described. These include: the direct contact method in which the solvent is applied directly to the bean, and the water extraction method which extracts caffeine and then uses solvent to separate the caffeine. VJG

74

Modeling the solubilization process during coffee brewing.
Voilley, A.; Simatos, D.
Journal of Food Process Engineering 3 (4) 185–198 (1980) [9 ref. En] [Ecole Nat. Superieure de Biol. Appliquee a la Nutr. & a l'Alimentation, F21100 Dijon, France]

2 different processes may be considered in coffee brewing: solubilization of some compounds from the grind into the water, and filtration of the extract through the grind. These processes have been dissociated in our experimental studies. The results obtained for the first of them, solubilization, will be reported here. Variations in soluble content as a function of time, temp., proportion of coffee to water

were interpreted in relation to a model based on the general equation of diffusion and assuming the grind to be spherical particles suspended in a homogeneous system. Qualitative variations in the chemical composition of the extract have also been determined by some physicochemical measurements: optical density, titratable acidity, viscosity, caffein content. AS

75

[Method and apparatus for preparing infusions of aromatic substances such as coffee and tea.]
Fornari, H. C.
French Patent Application 2 458 223 (1981) [Fr]

Method and apparatus for the title application are described. The bag, which is particularly intended to hold coffee, is of elongated shape with its longitudinal sides folded inwards in a concertina-like fashion. The bag contains an amount of coffee such that, on contact with water the concertina-shaped portions open out to increase the vol. of the bag; coffee at the bottom of the bag does not become compacted, allowing water to pass between the grains or particles. The amount of coffee used fills approx. half the bag vol. In use, the bag is held upright and repeatedly dipped into hot water for repeated filling and draining of the bag. W&Co

76

[Decaffeination process.]
Farr, D. R. (Societe des Produits Nestle SA)
Swiss Patent 626 781 (1981) [Fr]

A microbiological method for decaffeinating coffee is described. The microorganism employed, which uses the caffeine as its only source of C and N, is of the *Acinetobacter* sp. In the process, an aqueous extract of the coffee is incubated with the microorganism under aerobic conditions until a substantial part of the caffeine has been metabolized, after which the cells of the microorganism are separated out. The process has the advantage that it may be carried out at low temp., and the product is free from the usual solvent residues remaining after conventional treatment. W&Co

77

[Equipment and methods for high-pressure extraction.] Anlagen und Verfahren der Hochdruckextraktion.
Brogle, H.
Zeitschrift für Lebensmittel-Technologie und -Verfahrenstechnik 32 (7) 277–280 (1981) [4 ref. De]
[Nova Werke AG, Effretikon, Switzerland]

High-pressure extraction with liquid or supercritical gases is discussed, with reference to: basic principles; effects of solvent gas sp. gr. on extraction performance; practical aspects; applications, including preparation of spice extracts, extraction of caffeine from coffee beans, and extraction of vegetable oils; and available equipment, with reference to laboratory-, pilot- and industrial-scale installations. AJDW

78

Insulated container.
Kupperman, S.; Kupperman, D. (RB Products Corp.)
United States Patent 4 301 942 (1981) [En]

An insulated beverage container with a double wall construction has a removable partition in the centre of the container dividing it into 2 compartments. A top pivots on the partition and closes 1 of the compartments at a time. Liquid in one compartment flows to the other compartment through a connection at the bottom of the partition; the container, the partition and the top are all thermally insulated. The container is, particularly, a thermally insulated coffee mug. AS

79

Containers.
Metal Box Ltd.
British Patent 1 599 640 (1981) [En]

Can cover for ground coffee has a tear open closure with lug that is lined with an impermeable laminate of Al foil and acrylic acid, acrylic ester and a cation. AS

80

Carbon caffeine separation.
Katz, S. N.; Proscia, G. E. (General Foods Corp.)
United States Patent 4 298 736 (1981) [En]

Decaffeination process of e.g. green coffee beans and process for recovering caffeine from the activated carbon used are described. The caffeine recovery process involves contacting the carbon with a food grade organic acid or alcohol capable of displacing the caffeine from the active sites. [From En summ.] RAW

81

Process for the selective extraction of caffeine from plant materials.
Hag AG
British Patent 1 596 364 (1981) [En]

Caffeine is extracted from plant materials e.g. raw coffee beans, by using a mixture of CO_2 in an organic solvent, such as acetone. IFT

82

Process for reducing acid content steamed coffee.
Stolz, R. P.; Ouellette, N. P.; Linthorst, J. M.; Herlihy, T. V. (General Foods Corp.)
United States Patent 4 303 686 (1981) [En]

Soluble coffee is produced by steaming an elongated bed of roasted and ground coffee at atm pressure or above and collecting an aromatic flavour condensate. The steamed bed is then swept for ≥ 15 min with a gaseous stream having a superficial velocity through the bed > 3 m/min in order to entrain and remove liquid acid components. The coffee is then subjected to aqueous extraction, the extract is then combined with at least a portion of the condensate and dried. The resulting soluble coffee has a much reduced undesirable acid content compared to soluble coffee obtained from steamed coffee which has not been swept with gas. AS

83

Tea and coffee have unique needs.
Brown, R. S.
Tea and Coffee Trade Journal 153 (11) 14–15 (1981) [En] [Rowena Packaging Machines, Nocross, Georgia, USA]

This article briefly discusses the packaging demands of coffee and tea, covering packaging material, package shapes and sizes, protection equipment and product feed equipment. RM

84

Apparatus for use in preparing infusions.
Moskowitz, P. M.; Rushansky, Y.; Brown, L.; Weinstein, G. (Salton Inc.)
United States Patent 4 287 817 (1981) [En]

Apparatus is described for preparing infusions, such as any of several forms of the coffee beverage. It may include an enclosed container for electrically heated water to be utilized either as hot water or as steam. A bottom outlet from the container conveys hot water to a line/conduit to the inlet of an infuser or brewing basket, the outlet of which conveys a complete beverage or infusion to an appropriate container. A top outlet from the container conveys steam through an appropriate conduit/line containing ≥1 valve to another container, where the steam may be used to prepare a beverage such as cappuccino or may be employed for general heating purposes. AS

85

[Use of Soviet polymeric films for packaging coffee products.]
Lomachinskii, V. A.; Nakhmedov, F. G.; Dodonov, A. M.; Bel'kova, O. G.; Belitova, G. A.; Dubova, R. Yu.
Konservnaya i Ovoshchesushil'naya Promyshlennost' No. 4, 31–34 (1981) [Ru] [VNIIKP i SPT, USSR]

The major physical characteristics (e.g. bursting strength, gas permeability, adhesiveness) of 4 new Soviet laminates are tabulated. These laminates comprise: paper/PVDC (pP), paper/polypropylene (pPP), Cellophane/Al foil/polyethylene (CAP) and Lavsan/polyethylene (LP). The materials were used to package (with and without vacuum) instant coffee in packs which were stored for 8 months at 18–21°C/65–75% RH in corrugated fibreboard outer containers. Product quality retention (in terms of taste, odour, colour and infusion properties) was considerably better with CAP and LP, with no difference between (i) vacuum packaged and (ii) non-vacuum packaged coffees. The saturation was similar for coffee mixes packaged in the 4 materials, except that CAP gave the best results, with (ii) having a slightly higher rating than (i). Use of CAP in place of the currently used tin cans would lead to considerable overall costs savings. HBr

86

[Amino acid composition of instant coffee beverages.]
Nakhmedov, F. G.; Lomachinskii, V. A.; Kozlova, G. G.
Voprosy Pitaniya No. 1, 66–68 (1982) [5 ref. Ru] [Lab. Kofei, Pryanostei i Krasitelei VNII Konservnoi Promyshlennosti i Spetsial'noi Pishchevoi Tekhnologii Minpishcheproma SSSR, Moscow, USSR]

4 instant coffee beverages were analysed for total N (by the Kjeldahl micro method), and amino acid [AA] composition (using the LKB-1401 analyser) in the acid hydrolysates of the 4 beverages (preparation technique described). Results were statistically analysed. Chromatograms are given and data are tabulated on content (g/100 g product) of 17 individual AA, total AA, and total essential AA. Total AA content was similar for the 4 beverages but contents of individual acids varied between them: total AA content was 13.82% in 'Letnii' beverage (comprising barley and coffee), 10.2% in 'L'vovskii' (containing barley, coffee, rye and chicory), 9.52% in 'Mariya' (containing barley, coffee and chicory) and 7.95% in 'Yuzhnyi' (containing barley, coffee and grape seeds). Results confirm the opinion that increased content of reducing sugars intensifies melanoidin formation which reduces the nutritional value of the product but considerably improves the flavour and aroma of the end product; addition of e.g. chicory at 15–25% improves the colour, flavour and aroma of the beverages. Tryptophan was qualitatively determined and occurred in the beverages in trace amounts. It is concluded that considerable AA contents are retained throughout processing and remain in the final product, although tryptophan content may be considerably lower than initial values. [See also following abstr.] RAW

87

[Chemical composition of instant coffee beverages.]
Smolyanskii, B. L.; Ostaptseva, E. I.; Tsutskov, V. E.; Shibaeva, L. S.; Derkachev, E. A.
Voprosy Pitaniya No. 1, 68–69 (1982) [9 ref. Ru] [Kafedra Gigieny Pitaniya Dnepropetrovskogo Med. Inst., Dnepropetrovsk, USSR]

2 instant coffee beverages, the new beverage 'Yuzhnyi' (containing 70% barley, 10% grape seeds and 20% natural coffee) and the beverage 'Letnii' (containing 80% barley and 20% natural coffee) were subjected to chemical analysis; parallel trials were conducted on the chemical analysis of raw materials and semi-manufactured products (raw and roasted barley grains, grape seeds and coffee beans). Data are tabulated for the 2 beverages on contents of moisture, proteins, fats, mono- and disaccharides, energy value, ash, and minerals (K, Na, Ca, Mg, P). Chemical composition of the barley and coffee beans (raw materials or semi-manufactured products) agreed with the literature. In comparison with barley, grape seed raw material contained (/100 g wt.) less protein (averaging 10.1 and 4.9 g for barley and grape seeds, resp.), less starch (51.6 and 1.2 g, resp.) more cellulose (4.4 and 10.0 g, resp.) and more fats (1.7 and 18.4 g, resp.); grape seeds also had considerably higher P and Ca contents, but lower Mg contents and much lower Na contents. Compositional differences of the 2 beverages were attributed to the different recipes; overall the beverages were very similar regarding nutritional value. The lower caffeine contents of the 2 instant beverages (0.8–1.1%) in comparison with that of instant natural coffee (3.2–7%) enable their incorporation into the diet when consumption of natural coffee is restricted. [See also preceding abstr.] RAW

88

Process for decaffeinating green coffee.
Werkhoff, P.; Hubert, P. (Hag AG)
United States Patent 4 308 291 (1981) [En]

Process for decaffeinating green coffee comprises treating green coffee with at least one acetal, such as 1,1-dimethoxyethane or diethoxymethane, as an organic solvent, and removing solvent residues by steaming the treated green coffee. AS

89

[Factors contributing to sol and gel formation characteristics of gelatin.]
Kawamura, F.
New Food Industry [Nyu Fudo Indasutori] 23 (3) 63–74 (1981) [10 ref. Ja] [Tokyo Kasei Daigaku, Tokyo, Japan]

This contribution to the 7th symposium on food materials summarizes the results of model studies investigating factors affecting the formation and stability of jellies, including such things as fruit juices, tea, coffee or wine with 4% gelatin. The foam vol. of 4% gelatin sol was greatest and its viscosity least at its isoelectric point about pH 5; gel strength and m.p. were also max. at pH 5 and decreased as pH increased or decreased. Addition of 20% sugar increased sol viscosity and gel stability at pH 6.5 and 3.5; addition of 2% pectin solution at 40% increased sol viscosity but decreased gel stability. When sugar and pectin were added to gelatin at pH 3.5 sol viscosity was dramatically increased and gel stability was also increased. Addition of tannic acid at 100 mg% to gelatin at pH 5 or 6 caused a significant owing the protein precipitation; these effects were less marked in gelatin a pH 3. Tannic acid at 20 mg% had little effect on sol characteristics and improved gel formation except at pH 5. Ethanol at 5 or 10% decreased the foam vol. of the sol but improved gel formation. In the presence of ethanol (5%), tannic acid at 50 mg% slightly decreased the luminosity of sol at pH 4 and increased foam vol.; gel strength decreased. Addition of 0.8% pectin to gelatin containing 5% ethanol dramatically decreased sol luminosity and foam vol. and also greatly decreased gel strength; effects on sol luminosity and on gel formation were overcome by adding 20% sugar. Al^{3+}, Fe^{3+} or Fe^{2+} all increased sol viscosity and gel stability. Mayonnaise (40–60%) or roux (6–8%) increased the m.p. and strength of gels, particularly during cold storage. Compared with normal gelatin, inclusion of air by means of whipped egg white or cream increased gel m.p., cohesion and adhesion but decreased strength. CIH

90

Metallized films help reduce leakage.
Anon.
Tea and Coffee Trade Journal 153 (11) 12 (1981) [En]

Major improvements in package design and retention freshness of coffee have resulted from the use of vacuum metallized films. A 95% reduction in leaks in coffee pouch seals is claimed. RM

91

Antithiamins of plant origin: their chemical nature and mode of action. [Review]
Hilker, D. M.; Somogyi, J. C.
Annals of the New York Academy of Sciences 378, 137–145 (1982) [28 ref. En] [Dep. of Food Sci. & Human Nutr., Univ. of Hawaii, Honolulu, Hawaii 96822, USA]

The subject is reviewed, including the author's work, with particular reference to consumption of tea and coffee. Human tests have shown that consumption of tea or coffee can cause decreased thiamin excretion and blood transketolase, and it is possible that heavy coffee or tea drinkers may have nervous symptoms associated with thiamin deficiency. AL

92

Liquid chromatographic determination of caffeine in biologic fluids.
Haughey, D. B.; Greenberg, R.; Schaal, S. F.; Lima, J. J.
Journal of Chromatography, Biomedical Applications 229 (2) 387–395 (1982) [19 ref. En] [Div. of Pharmacy Practice, Ohio State Univ., Columbus, Ohio 43210, USA]

An HPLC procedure for detn. of caffeine in various biological fluids and in coffee is described. It uses a reversed phase column and UV detection at 254 nm. AL

93

[Device for the elimination of acid from an aqueous coffee extract for the production of powder for instant coffee.] Vorrichtung zum Entsäuern eines wässrigen Kaffee-Extraktes zur Herstellung von Pulver für Instant-Kaffee
Schmid, H.
German Federal Republic Patent Application 8 116 265 (1981) [De]

The device comprises a water-tight vessel, subdivided by an (at least) ion-permeable partition into 2 chambers, containing ≥ 1 electrode, and a water-permeable filter for separating the extract. The partition is water-permeable and with the filter defines a boundary plane. W&Co

94

Sister chromatid exchanges induced by methylxanthines contained in coffee, tea and cocoa.
Renner, H. W.
Experientia 38 (5) 600 (1982) [19 ref. En] [Fed. Res Cent. for Nutr., Engesserstr. 20, D-7500 Karlsruhe, Federal Republic of Germany]

Methylxanthines consumed daily by most humans were investigated for induction of sister chromatid exchanges (SCE). Effects observed in a highly sensitive in vivo system (Chinese hamster bone marrow cells) decreased in the order theophylline/theobromine > caffeine > paraxanthine > monomethylxanthines. AS

95

[Chemical studies on the quality of coffee. V. Changes in the sucrose contents of coffee beans in the course of roasting.]
Nakabayashi, T.
Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi] 24 (9) 479–483 (1977) [10 ref. Ja, en] [Fac. of Agric., Shizuoka Univ., Ohya 836, Shizuoka-shi, Japan]

Monosaccharides and sucrose were determined in coffee independently of chlorogenic acid or brown pigments by active carbon column chromatography. Sucrose content was 7.02% in green coffee beans, but rapidly decreased on roasting before the fall in chlorogenic acid and browning took place. A low mol. wt. compound which behaved as a monosaccharide on the column was detected, whose concn. rose during roasting. [From En summ.] [See FSTA (1982) **14** 5H756 for part IV.] JRR

96

Process for producing a flavored heated beverage.
Marmo, D.; Rocco, F. L. (International Flavors & Fragrances Inc.)
United States Patent 4 311 720 (1982) [En]

Instant coffee and tea products are described in which flavour is released at high intensity, uniformly over an extended period of time. The beverage mix contains a powdered mixture of (i) a non-confined hydrophobic flavour oil, (ii) a hydrolytically releasable flavour oil physically entrapped in an edible solid material, and (iii) a hydroxypropyl cellulose suspending agent. (i)–(iii) are premixed before addition to the product, e.g. lemon tea mix. RAW

97

Decaffeination.
Green, D.; Blanc, M. (Societe des Produits Nestle SA)
UK Patent Application 2 076 626A (1981) [En]

Process is described in which green coffee bean extracts are decaffeinated by treatment with a neutralized activated carbon. IFT

98

[Recovery of coffee aroma during roasting. II. Removal of fats.]
Shin, H. K.; Crouzet, J.
Cafe-Cacao-The 25 (3) 191–196 (1981) [10 ref. Fr, en, de, es] [USTL, Pl. E Bataillon, 340 60 Montpellier Cedex, France]

The removal of fats, present mainly as aerosols, in the coffee roasting gases produced by a continuous roasting simulator was studied using the previously described apparatus (part I). Condensation and absorption allowed 85% recovery of volatile compounds but only 70% max. of trapped fats. By substituting an impact trapping device for the washing tower and using gas speeds > 30 m/s, 90% of the fats could be trapped. The efficiency of the device varied with the speed of the jet, the pressure drop and the amount of fats in the gases.

The % of petrol ether-soluble (55.5%) and -insoluble fractions (44.5%) and the fatty acid composition of the trapped fats suggest that they are derived mainly from the waxes of green coffee. [See FSTA (1982) **14** 4H624 for part I.] AS

99

Process for preparing microporous structured soluble coffee product.
Dwyer, D. E., Jr. (General Foods Corp.)
United States Patent 4 313 265 (1982) [En]

Process is described in which a pre-chilled metal plate is quickly immersed in an aqueous composition of coffee solids to freeze a thin layer which is removed in the form of flakes, ground to produce particles and freeze-dried. IFT

100

Extraction process creates low-fat potato chips.
Hannigan, K. J.
Food Engineering 53 (7) 77 (1981) [En]

Arthur D. Little Inc. (USA) now manufactures a low fat potato crisp. The process (developed by Critical Fluid Systems Inc.) involves the removal of fat from the crisp using supercritical CO_2, proteins and carbohydrates not being soluble in supercritical CO_2 and thus not being affected. Removal of 50% of the fat is claimed, to give a crisp that has similar texture and flavour characteristics to the original product. Current commercial scale applications of this process are decaffeination of coffee (Hag AG, Federal Republic of Germany) and liquid-CO_2 extraction of hops (Australia). RAW

101

[Aroma of foods.] (In *'Problemy kachestva i biologicheskoi tsennosti pishchevykh produktov'* [see FSTA (1982) **14** 11G722].)
Simonova, V. N.; Antonov, N. A.
pp. 68–77 (1979) [Ru] [Leningradskii Inst. Sovetskoi Torgovli im. F. Engel'sa, Leningrad, USSR]

Generally accepted methods for extraction of volatile aroma compounds from foods are outlined. The GLC method used to study aroma compounds obtained by vacuum distillation from (i) beef, (ii) cold-smoked mackerel, and (iii) soluble coffee is described in detail. Chromatograms of the 3 products are presented. Some 60 peaks were detected in (i) chromatogram on the 'Tsvet-104' instrument, but their identification is considered difficult. (ii) showed some 65 peaks on the LKhM-8MD 4 instrument, and identification of the phenolic fraction is tabulated, proportions of 15 named compounds and 6 not identified being presented. The 'Tsvet-1 64' instrument was used for (iii). Carbonyl compounds predominated; 17 identified peaks are named, 1 was not identified. SKK

102

[New generation of packaging machines.]
Anon.
Latte 5 (9) 596–597 (1980) [It]

An account is given of 2 machines that fill and aseptically seal cartons of coffee cream and other products (Robert Bosch Co., Hoefliger + Karg division). The smaller of the 2 models, TFA 240 AS, can produce 375 single-portion cream cartons (7–15 g each)/min. The larger SERVAC 78 AS machine produces 1500 cream cartons/min; it can also fill 100-g cartons with yoghurt or other dessert products at a slower rate. MC

103

Food product.
Moran, D. P.J.; Halstead, P. W. (Lever Brothers Co.)
United States Patent 4 305 964 (1981) [En]

A typical example of a food product, consisting of a continuous aqueous phase and a dispersed gelled aqueous phase (gelled water beads of 5–10 μm diam.), is a low calorie coffee cream containing 25.0% gelled water beads, 4% oil associated with beads, 6.0% free oil, 3.0% buttermilk protein, 2.0% lactose, 0.4% phospholipids, 0.2% agar and 59.4% water. EJM

104

9th International Scientific Colloquium on Coffee. [Conference proceedings]
Association Scientifique Internationale du Cafe 835pp. (1980) [many ref. En, Fr, De, Es] 34 Rue des Renaudes, 75017 Paris, France; ASIC

The full text is given of papers presented at this conference, held in London, 16–20 June 1980, including the following. Science and technology for a producing country, by M. Quijano-Rico (pp. 23–40, 31 ref., Es). New trends in the pharmacology of caffeine, by R. Paoletti & S. Cantaluppi (pp. 41–53, 72 ref., En). An attempt to localize caffeine in the cell by its washout kinetics, by R. Pfrunder, H. Wanner, P. M. Frischknecht & T. W. Baumann (pp. 169–175, 8 ref., En). The utility of chemical engineering principles in coffee processing technology, by C. J. King (pp. 237–250, 5 ref., En). Microbiological methods for the disposal and utilization of coffee-processing wastes, by M. R. Adams & J. Dougan (pp. 325–333, 40 ref., En). Study of the chemical composition of coffee pulp, by J. Zuluaga Vasco & R. Tabacchi (pp. 335–344, 13 ref., Fr). Possible interaction of coffee consumption with cardiovascular disturbances, by L. Wilhelmsen, G. Tibblin, D. Elmfeldt, K. Svärdsudd & H. Wedel (pp. 353–360, 15 ref., En). Coffee in health and disease: a critical review of the medical literature, by S. Heyden (pp. 361–370, 40 ref., En). Effects of caffeine on anterior pituitary and thyroid function in the rat, by E. Spindel, M. Arnold, B. Cusack & R. J. Wurtman (pp. 413–425, 35 ref., En). Coffee, gastrointestinal hormones and oesophagal function, by H. P. Wurzner (pp. 433–442, 9 ref., En). Recent developments in the science and technology of coffee, by R. F. Smith (pp. 443–465, 240 ref., En). International coffee standardization and legislation, by R. J. Clarke (pp. 467–472, 2 ref., En). The mechanization of coffee production, by A. G. Watson (pp. 681–686, En). Biotechnology in green coffee processing, by C. Rolz (pp. 709–716, 26 ref., En). A further 25 papers are abstracted separately in FSTA, and may be found via the author index under Association Scientifique Internationale du Cafe [9th Symposium]. AJDW

105

Coffee processing research: a review. [Review]
Kulaba, G. W.
Kenya Coffee 46 (549) 351–360 (1981) [many ref. En]
[Kenya Ind. Res. & Development Inst., Nairobi, Kenya]

This review includes sections on fermentation studies (with discussions on the 2-stage fermentation procedure, the use of commercial pectic enzymes, natural enzymes from fermenting coffee, mucilage composition and pattern of enzymic changes, pollution and influence of coffee factory waters, chemical characteristics linked to quality aspects of the fermentation process), coffee drying studies (sun drying of Arabica coffee, machine drying of coffee, raw bean colours, chemistry of drying, physical effects of drying), coffee storage studies (storage methods and quality deterioration, chemistry of quality deterioration), defectives ('stinkers' or overfermented coffee beans, other bean defects), scientific assessment of coffee quality (advantages over subjective method, studies on the volatile aroma of roasted coffee, studies on green coffee volatiles, assessment by chemical composition of the green bean, UV-light fluorescence sorting in quality assessment), and miscellaneous studies (products derived from low quality coffee, paints for coffee stores, fermentation tanks and channels, covering materials for drying parchment coffee, moisture meters for coffee, factory designs). RM

106

[Quality control in coffee bean roasting and packaging.]
Kanyo, G.
Edesipar 33 (2) 33–37 (1982) [5 ref. Hu, de, ru]

The introduction of the Gothot continuous rapid roasting method resulted in increased swelling of the beans, reduced roasting losses, and almost complete removal of foreign materials. The gradings for green coffee beans are also given according to the Brazilian, French and Hungarian specifications. ESK

107

Infusion type beverage maker.
Lowerre, W. M., Jr.
United States Patent 4 309 940 (1982) [En]

An automatic drip coffee maker makes drip coffee by the use of a relatively small water reservoir that holds less than the total quantity of water. The coffee maker automatically transfers the remainder of the total quantity of water to the beverage storage container. The coffee maker also automatically heats the water in the reservoir and transfers it to a basket of ground coffee to make a concentrated brew which drips into the storage space which already contains a quantity of water sufficient to dilute the concentrated brew to a desired drinking strength. The same beverage strength is produced over a narrow range of brewing times for a wide range of cups brewed. The coffee maker is significantly smaller overall than conventional drip coffee makers. The convenience of conventional coffee makers is maintained, e.g. structural components to be handled by the user do not exceed those of a conventional percolator. There are no moving parts apart from ≥ 1 bimetal thermostats. The maker can be adapted to various drip coffee maker configurations, and to percolators. AS

108

Preliminary studies on control of *Araecerus fasciculatus* infesting coffee by bag impregnation.

Chacko, M. J.; Krishnamoorthy Bhat, P.
Journal of Coffee Research 9 (1) 24–25 (1979) [6 ref. En] [Central Coffee Res. Inst., Coffee Res. Sta., 577117 Chikmagalur District, Karnataka, India]

Coffee beans stored in jute bags that had been impregnated with malathion or phoxim were completely resistant to attack by the coffee bean beetle *A. fasciculatus* over a period of 8 months under conditions in which beans in untreated bags were severely infested. DIH

109

Distribution of caffeine in arabica and robusta coffee plants.

Raju, K. I.; Gopal, N. H.
Journal of Coffee Research 9 (4) 83–90 (1979) [19 ref. En] [Cent. Coffee Res. Inst., Coffee Res. Sta., 577 117 Chikmagalur District, Karnataka, India]

Caffeine contents in plant parts of 9-month and 7-yr old *Caffea arabica* S. 795 and *C. canephora* S. 274 (arabica and robusta var., resp.) are tabulated. Ripe arabica and robusta beans contained 1.09 and 2.53% oven-dry-wt. caffeine, resp. DIH

110

Comments on the article "Carbofuran residues in coffee beans".

Mithyantha, M. S.; Agnihothrudu, V.
Journal of Coffee Research 7 (3) 84–85 (1977) [8 ref. En] [Res. & Development Lab., Rallis India Ltd., 87 Richmond Road, Bangalore 560025, India]

In the opinion of the present authors, results reported by Venkataramaiah & Singh [see FSTA (1977) 9 7H1204], showing presence of 7 metabolites of Furadan in coffee beans even 1 yr after application of 66 g/plant, are invalid because of insufficient sample clean-up. R_f values for metabolites identified by TLC differ from those reported elsewhere. The present authors cite other studies that indicate that carbofuran or its metabolites do not persist or accumulate in coffee beans. DIH

111

[Formation of aroma compounds by the Maillard reaction.] Bildung von Aromastoffen durch Maillardreaktion. (In *'9th International Scientific Colloquium on Coffee'* [see FSTA (1982) 14 11H1751]) [Lecture]
Tressl, R.
pp. 55–76 (1980) [50 ref. De] [Forschungsinst. für Chem.-Tech. Analyse, Tech. Univ. Berlin, Seestrasse 13, D-1000 Berlin 65]

Formation of aroma compounds by the Maillard reaction during roasting of coffee is discussed, with reference to results of studies on coffee, malt and model systems. Aspects considered include: formation of furans; formation of caramel components; formation of aroma components from Stecker aldehydes; formation of N-containing heterocyclic compounds from proline and hydroxyproline; formation of aldimines, amines and pyrroles; formation of S-containing furan derivatives; and formation of pyrazines, thiazoles and oxazoles. AJDW

112

[Model studies on aroma formation in coffee.] Modelluntersuchungen über die Aromabildung in Kaffee. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751]) [Lecture]
Herrmann, G.; Baltes, W.
pp. 77–85 (1980) [8 ref. De] [Inst. für Lebensmittelchem., Tech. Univ. Berlin, Müller-Breslau-Strasse 10, D-1000 Berlin 12]

Sucrose was heated with twice the molar quantity of serine + threonine at 225°C, and volatile reaction products were analysed by glass-capillary gas chromatography coupled with MS. Overall, 400 components were separated, the combined sensory impression being a sharp 'roasted' aroma. 120 components were identified, including pyrazines, pyridines, pyrroles, quinoxalines, furans and an oxazole. Pyrazine derivatives comprised 80–85% of the total; pyrrole derivatives were also present in appreciable quantities. Pyridine compounds comprised <0.5% of the total. AJDW

113

[Application of HPLC to some constituents of coffee.] (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751]) [Lecture]
Moll, H. R.; Pictet, G. A.
pp. 87–98 (1980) [3 ref. Fr] [Soc. d'Assistance Technique pour les Produits Nestle, CH-1350 Orbe, Switzerland]

Studies on HPLC analysis of extracts of green and roasted coffee are described; trials were conducted to determine the optimum UV wavelength for detn. of various compounds in the eluate. Arabica and canephora coffees could be differentiated by HPLC of their extracts. Differences were also observed between coffees of different geographical origins. Changes in the HPLC profile as a result of roasting are discussed. Organoleptic properties of the infusions are discussed, together with their relation to degree of roasting and analytical data. Changes in phenolic and aliphatic acids during roasting are discussed. AJDW

114

Evidence for complex formation between thiamine and the chlorogenate ion in aqueous solution. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751]) [Lecture]
Horman, I.; Carpenter, R. A.; Brambilla, E.; Dreux, B.
pp. 99–106 (1980) [5 ref. En] [Nestle Res. Lab., CH-1814 La Tour-de-Peilz, Switzerland]

Chlorogenic acid is an ester of caffeic acid and is found in coffee. A suspected thiamin-chlorogenate complex was studied to ascertain if it did exist, and if so whether it was strong enough to deactivate thiamin. NMR was used to measure complex strength and to clarify the nature of the complex. Interaction was possible between the pyrimide ring of thiamin and the

caffeic acid moiety of chlorogenate, and between the negatively charged carboxyl group of chlorogenate with the positively charged thiazole ring in thiamin. Association constants of chlorogenate with thiamin and with caffeine are given. These results were applied theoretically to coffee, and it is concluded that the amount of chlorogenate consumed in coffee would not markedly affect bodily thiamin levels, as the complex is not sufficiently strong. LH

115

Analysis of chlorogenic acids in coffee. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Stegen, G. H. D. van der; Duijn, J. van
pp. 107–112 (1980) [12 ref. En] [Douwe Egberts, R & D, Utrecht, Netherlands]

An HPLC analysis method for chlorogenic acids in coffee is described, using a reverse phase column and an aqueous eluent containing citrate buffer and methanol. Various coffees (Robusta, Arabusta and Arabica) in raw, green, roasted decaffeinated or steamed conditions were analysed, and the identification of peaks is discussed. Results are given in tables and as reproduced chromatograms. LH

116

[Determination of extraction yield of coffee extract.] Zur Bestimmung der Extraktionsausbeute von Kaffee-Extrakt. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Maier, H. G.
pp. 113–123 (1980) [4 ref. De] [Inst. für Lebensmittelchem., Tech. Univ. Braunschweig, D-3300 Braunschweig, Federal Republic of Germany]

Studies were conducted to evaluate the potential for calculation of the extraction yield of coffee extract, either with or without knowledge of analytical data of the original coffee. For estimation in the absence of data for the original coffees, the best results were given by detn. of K or sulphate ash concn.; dependence on extract yield was hyperbolic. Error was ± 10% absolute. Estimation of extract yield when the composition of the original coffee is known is possible on the basis of K concn.; incomplete extraction of K may however lead to an error of up to approx. 5%. It is suggested that estimation of extraction yield on the basis of analytical data for several parameters is desirable. AJDW

117

Investigations of contaminants in coffee. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Levi, C. P.
pp. 125–133 (1980) [35 ref. En] [General Foods Tech. Cent., Tarrytown, New York, USA]

In the first part of this paper a review of studies on analysis of benzo(a)pyrene (BaP) in coffee production is presented, followed by an investigation into BaP in (i) roasted and ground (13 samples), and (ii) soluble (20 samples) coffee. The analytical method chosen involved liquid-liquid partition, followed by HPLC with fluorescence detection. Levels of BaP were 5–30 µg/kg in 8 samples of (i) vs. 1–7 µg/kg in 9 of (ii), with remaining samples containing below detectable levels (< 1 µg/kg). In the second part, data is compiled from various studies into mycotoxins, i.e. aflatoxin, ochratoxin and sterigmatocystin, in damaged or commercial green coffees. Numerous tables illustrate literature values of BaP in coffee, various grains and vegetable oils, and prepared food products, and give results of experimental studies. LH

118

[Chemical characteristics for supplementary quality evaluation of roasted and non-roasted coffee.] Chemische Kennzahlen zur Ergänzenden Qualitätsbeurteilung von Roh- und Röstkaffee. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Wurziger, J.; Drews, R.; Suche, B.
pp. 151–158 (1980) [De] [Hygienische Inst., Hamburg, Federal Republic of Germany]

Analytical data are given for samples of raw and roasted arabica, robusta and hybrid coffees from various sources, and of commercial coffees, including the coffee oil concn., the alkali colour value, and KI/glacial acetic acid extinction values. The results are discussed in detail, with reference to differences between types and origins of the coffees studied. AJDW

119

Caffeine methodology: semi-automatic method for the determination of caffeine in green and processed coffees. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Sloman, K. G.
pp. 159–168 (1980) [21 ref. En] [General Foods Tech. Cent., Tarrytown, New York, USA]

A rapid, accurate method for caffeine analysis in coffee is described, suitable for use by relatively unsophisticated personnel and able to handle large numbers of samples. The procedure applies to decaffeinated and regular (green, roasted and ground, and soluble) coffees. Sample is weighed, extracted with MgO or hot water, clarified if neccessary with zinc ferrocyanide or potassium permanganate, and autoanalysed in the Technicon standard equipment; calculation of caffeine concn. from the resultant chart is explained. This method was compared to the official AOAC method, and tended to give slightly higher values, particularly on decaffeinated coffees. LH

120

[Sea transport of green coffee, and containerization.] (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Jouanjan, F.
pp. 177–188 (1980) [Fr] [Compagnie Generale Maritime, Paris, France]

Sea transport of green coffee is discussed, with

reference to: packaging; deterioration of coffee during conventional sea transport; transport sensitivity of different coffee types; effects of the condition of the coffee at the time of loading; effects of season and climatic conditions; containerization; types of containers; the current situation in relation to transport of green coffee in containers; general measures for control of deterioration; and future prospects. AJDW

121

Storage research on Kenya Arabica coffee. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Stirling, H.
pp. 189–200 (1980) [En] [Nat. Res. Development Corp., Kingsgate House, 66/74 Victoria Street, London SW1E 6SL, UK]

Various studies carried out in Kenya are described. The effects of high storage temp. and bean moisture contents or ambient humidities on storage quality losses of coffee were investigated. In order to preserve high quality in Arabica beans during extended storage, beans must be kept cool (storage temp. $<20°C$), in a dry environment (50–70% RH), with constant (no fluctuations) temp. and humidity conditions. Controlled ventilation was more beneficial than sealed storage, especially at high temp. Parchment coffee stored better than pre-hulled, which stored better than clean coffee. Under the above conditions parchment coffee retained its quality for at least 12 months. Good initial storage conditions minimized deterioration under subsequent unfavourable environments (e.g. during export). Means of achieving these criteria in humid and non-humid tropical areas are considered. LH

122

Instrumentation system for the analysis of coffee beans. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Maughan, W. S.; Milo, S.; Roarzi, L.
pp. 201–210 (1980) [En] [Gunson's Sortex Ltd., London, UK]

A computerized system currently used to measure the colorimetric properties of different lots of green coffee is described. The system consists of an HP 1000 Computer System and a 425 C Sorting Machine from Gunson's Sortex Ltd. The effectiveness of various methods of data transformation was assessed. LH

123

Pattern recognition in sorting green coffee beans. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Milo, S.
pp. 211–217 (1980) [En] [Dep. of Electronic Eng., Univ. of Trieste, Trieste, Italy]

Use of microprocessors in the field of sorting green coffee beans on the basis of their reflectance is discussed. A sorting regime was established in 3 phases, i.e. (i) colorimetric characteristics of a representative number of beans from a lot of coffee were measured; (ii) on the basis of (i), parameters which characterize the sorting criteria were derived; and (iii) actual sorting of an entire lot of green beans was done on the basis of parameters from (ii). LH

124

Coffee sorting with UV excitation. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Carter, H. J.
pp. 219–226 (1980) [2 ref. En] [Icore Div., Acurex Corp., California, USA]

The art of coffee colour sorting is briefly surveyed, and then tests done using coffee bean fluorescence (on excitation by long wave UV) measured by a computer controlled scanning spectroradiometer, as an index of coffee taste, are described. UV sorting of coffee did not seem economically justified, although UV could be used to remove beans which failed to polish, because the onion skin blocked the radiation. This had no affect on coffee taste. Using UV differentiation to distinguish poor quality beans is possible, but before such practices are used the producer should be sure to validate the sorting criteria. LH

125

[Improvements in treatment of harvested coffee. Application to Arabusta coffee.] (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Vincent, J.-C.; Jacquet, M.
pp. 227–236 (1980) [Fr] [Lab. de Chimie-Tech., IFCC, BP 5035, 34032 Montpellier Cedex, France]

Aspects considered include: a wet-process line for processing of green coffee at the plantation (covering separation of impurities, pulping, fermentation and drying); cleaning; husking of the dried coffee; elimination of inferior quality beans; packaging and transport; and utilization of by-products. AJDW

126

Flavour retention during freeze-drying of coffee. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) 14 11H1751].) [Lecture]
Fosbol, P.; Petersen, E. E.
pp. 251–266 (1980) [22 ref. En] [A/S Atlas, Copenhagen, Denmark]

Coffee extract was frozen in a 1-stage or a 2-stage process, ground, and freeze-dried at 2 layer thicknesses (2 or 12–13 mm, corresponding to drying times of 0.5 or 6 h). Samples were stored in tins at ambient temp. in N_2 for 6 months, until analysis of volatile and flavour compounds by gas chromatography. Organoleptic evaluation of all samples was done by a trained panel using a 1 = excellent to 5 = unsatisfactory scale. Statistical analysis of results is presented. It was concluded that the processes had little effect on overall volatile retention, but that retention of the most volatile components increased if the freezing rate and ice front temp. were decreased, and if the drying rate was increased. LH

127

Possible applications of enzymes in coffee processing. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) **14** 11H1751].) [Lecture]
Ehlers, G. M.
pp. 267–271 (1980) [7 ref. En] [Novo Ind. A/S, Novo Alle, 2880 Bagsvaerd, Denmark]

Application of industrially produced enzymes in the form of highly purified, standardized preparations made by fermentation of a pure culture of a chosen bacterial or fungal strain, to coffee processing is described. Literature on the subject is reviewed briefly, and the paper is given in sections: application of pectinases during wet processing, with subsections on reasons for use of pectinases, simplification of coffee processing by their use, potential for increased plant capacity, improvements in coffee quality, and the inexpensive installation of such treatments; and application of galactomannanase (to reduce viscosity of coffee extracts for evaporation to higher solids content before being spray- or freeze-dried). LH

128

Consumer and expert evaluations of stored coffee products. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) **14** 11H1751].) [Lecture]
Clinton, W. P.
pp. 273–285 (1980) [En] [Maxwell House Div., General Foods Corp., 250 North Street, White Plains, New York 10625, USA]

Data on evaluation of quality changes during storage of roasted and ground vacuum-packaged coffee and of agglomerated and freeze-dried coffee as retailed in USA are presented. Quality assessments (flavour and aroma) were made by an expert panel, and consumer acceptance was determined by usage in the home over a period of time. Effects of moisture, O_2 and temp. were considered. Results are presented in graphs and tables, and discussed. Quality loss was speeded up by lowering vacuum. LH

129

[Evaluation of the quality of a cup of coffee. Effect of the temperature of water used for extraction.] (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) **14** 11H1751].) [Lecture]
Voilley, A.; Sauvageot, F.; Pirret, P.
pp. 287–294 (1980) [8 ref. Fr] [Lab. de Biol. Physico-Chimique, ENSBANA, Campus Universitaire de Montmuzard, F-21100 Dijon, France]

Studies were conducted to evaluate effects of extraction temp. (over the range 70–120°C) on the quality of coffee infusion. Characteristics studied included colour, bitterness, aroma, acidity, DM content, optical density (430 and 510 nm), % degree of extraction, caffeine content, acidity, conductance, and pH. Tables and graphs of results are given. The results show that all these characteristics except pH increased with increasing temp.; pH decreased. Correlations with extraction temp. were significant for intensity of the various organoleptic properties (but not for their quality), and for all the physico-chemical properties studied. In spite of the significant differences for various characteristics, little difference in overall preference

130

Decaffeination of coffee. (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) **14** 11H1751].) [Lecture]
Katz, S. N.
pp. 295–302 (1980) [13 ref. En] [Maxwell House Div., General Foods Corp., Hoboken, New Jersey 07030, USA]

The nature and use of caffeine are briefly discussed, and its manufacture as a by-product of coffee decaffeination considered. 2 major commercial decaffeination techniques, i.e. solvent and water treatment are described. The purity of caffeine from these processes may be as low as 70% by wt., so refining is done by various purifying steps, including evaporation, condensation, filtration, centrifugation, crystallization and air drying to yield a US pharmacopoeia grade caffeine. LH

131

Is there an anti-thiamine effect of coffee? (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) **14** 11H1751].) [Lecture]
Stalder, R.
pp. 427–432 (1980) [6 ref. En] [Soc. d'Assistance Tech. pour Produits Nestle SA, Lab. Biol. Orbe, CH-1350 Orbe, Switzerland]

4 experiments are described in which humans, female mice and male rats were given coffee (drink or in admixture with food) for various times, and thiamin levels in blood and urine were measured by the thiochrome method; values measured in urine were confirmed by a microbiological assay using *Lactobacillus viridescens* as the indicator organism. It is concluded from results that coffee consumption does not influence the thiamin status of man, but that an anti-thiamin effect of coffee could be provoked in animals by an extreme unphysiological experimental design. LH

132

[Use of electron spin resonance in studies on evaluation of coffee at high temperatures.] (In *'9th International Scientific Coloquium on Coffee'* [see FSTA (1982) **14** 11H1751].) [Lecture]
Diaz S., J.; Ruiz O., P.
pp. 687–691 (1980) [6 ref. Es] [Dep. de Fisica, Univ. Nacional, Bogota, Colombia]

Electron spin resonance (ESR) studies were conducted to evaluate effects of extraction conditions on free radical concn. during extraction at temp. over the range 100–180°C. Data are given showing amplitude of the ESR signal, extraction yield, pH and soluble solids concn. Amplitude of the ESR signal increased with increasing extraction temp., indicating increases in free radical concn.; extraction yield and soluble solids concn. also increased with increasing temp., whereas pH decreased. These changes were most clear for the temp. range > 140°C. On the basis of the results, it is concluded that both physical and chemical processes are of importance in extraction of coffee. AJDW

133

[Comparative study of polyphenol oxidase and peroxidase activities of different commercial varieties of green coffee during storage.] (In *'Problemy kachestva i biologicheskoi tsennosti pishchevykh produktov'* [see FSTA (1982) 14 11G722])
Solov'eva, T. Ya.
pp. 27–34 (1979) [Ru] [Leningradskii Inst. Sovetskoi Torgovli im. F. Engel'sa, Leningrad, USSR]

Samples of Arabica Costa Rica of 1974 and 1976 harvests, Arabica Santos of 1974, 1975 and 1977 harvests, Robusta Angola of 1976 and 1977 harvests, and Robusta Uganda of 1972 and 1974 harvests commercial green coffee var. were examined in 1977. Enzyme activity was measured by the method of Boyarkin (no details given) involving optical density measurements; enzymes in buffer extracts from the coffees were fractionated by polyacrylamide gel electrophoresis. Results are tabulated and graphically shown, and electropherograms of polyphenol oxidase and peroxidase isoenzymes are presented. Enzyme activity decreased with increase in duration of storage; Arabica and Robusta coffees showed 5 isoenzyme zones of polyphenol oxidase, intensity of the zones decreasing markedly in storage; Arabica coffees showed 6–7 zones of peroxidase isoenzymes, and Robusta coffees showed 3–4, intensity again decreasing in storage. It is considered that Arabica and Robusta spp. of coffee may be differentiated by isoenzyme composition of their peroxidases. SKK

134

[Coffee beverage.] Kaffeegetränk.
Ender, J.
German Federal Republic Patent Application 3 010 240 (1981) [De]

To make a coffee beverage of the 'Irish coffee' type, a non-alcoholic liquid composition is made which is then added to the coffee. This composition comprises a mixture of fruit juices, i.e. passion fruit, orange, kiwi, avocado, and litchi juice; this can be used immediately on production, or may be stored after (i) heating or (ii) a small addition of alcohol. For (ii), a tasteless alcoholic beverage is preferred, so as not to impair the taste of the fruit juice composition; armagnac is a suitable alcoholic beverage. Preparation technique (ii) is advantageous, as the fruit juice taste is intensified. The composition is added to hot coffee and, if desired, consumed with cream. RAW

135

Quality control of coffee.
Anon.
Indian Coffee 46 (1/2) 3–24 (1982) [En]

This is a summary of all the 'do's' and 'don'ts' in coffee processing, starting with the picking of berries, and followed by curing, drying, hulling, grading and blending, bulking, assessment and cup-tasting. CFTRI

136

Biotechnology in washed coffee processing.
Rolz, C.; Menchu, J. F.; Calzada, F.; Leon, R. de; Garcia, R.
Process Biochemistry 17 (2) 8–10, 22 (1982) [26 ref. En] [Applied Res. Div., Cent. American Res. Inst. for Ind., PO Box 1552, Guatemala City, Guatemala]

Available alternatives to various processes used in conventional coffee fermentation and drying are surveyed. These alternatives allow implementation of combined waste treatment systems with by-products upgrading and fuel production. They include: reducing water usage in pulping by recycling waters; continuous pressing of pulp; decomposing pressing pulp aerobically to produce organic fertilizer; use of pressed juices as fermentation substrates to produce single cell protein; use of microbial systems involved in these fermentations to remove mucilage from coffee beans; and replacing the traditional coffee pulper with a screw press, in order to perform simultaneous depulping and demucilagination, and to recover pectin from the press liquid. LH

137

Coffee aromatisation process.
Liu, R. T.-S. (Societe des Produits Nestle SA)
UK Patent Application 2 077 088A (1981) [En]

Process is described for separating volatile aroma compounds from gases used in extraction of fresh roasted and ground coffee. Roasted and ground coffee is wetted and extracted in an aqueous medium, and an extract withdrawn at $<100°C$; the extract and gases that evolved during wetting are separated in a separation chamber; and the separated gases are passed through a 1st condenser to condense and remove water and through a 2nd condenser at 0–5°C to remove and collect volatile aroma compounds. These compounds are then recombined with an aqueous or dried coffee extract, to give final coffee product with good aroma and balanced in-cup flavour characteristics. [From En summ.] RAW

138

The history of instant coffee.
Marron, M.
South African Food Review 9 (2) 35–36 (1982) [En]

After a brief introduction detailing the history of coffee, various aspects of the modern coffee industry are discussed, i.e. how instant coffee is made (spray drying, freeze drying, decaffeination), coffee additives and substitutes, the taste of instant coffees, and whether caffeine is harmful or not. LH

139

Treatment of a coffee extract.
Adamer, S. (Societe d'Assistance Technique pour Produits Nestle SA)
United States Patent 4 316 916 (1982) [En]

When gaseous beverages based on coffee are prepared by mixing the appropriate ingredients, i.e. without any other treatment, they spurt from their container when it is opened. The sudden decompression

of the beverage results in an uncontrolled effervescence and in the overflow of a large part of the contents of the container, even at refrigeration temp. This may be overcome by adding to the beverage an anti-foam additive such as dimethyl polysiloxane; however this additive is not permitted or even accepted in every country. The described process obviates the disadvantages of "spurting" whilst having the advantage of not requiring the use of an additive. The process comprises adjusting the pH of the extract to 3.0–4.5 (preferably 3.8–4.2) and then eliminating the subsequently formed flocculate. The coffee extract thus treated may be used in the production of coffee-based gaseous beverages. A gaseous beverage produced in this way does not spurt out when the container is opened. In an example, a beverage was made according to the described process using an industrial coffee extract and demineralized carbonated water. RAW

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